Ready to start for Somewhere in the Atlantic

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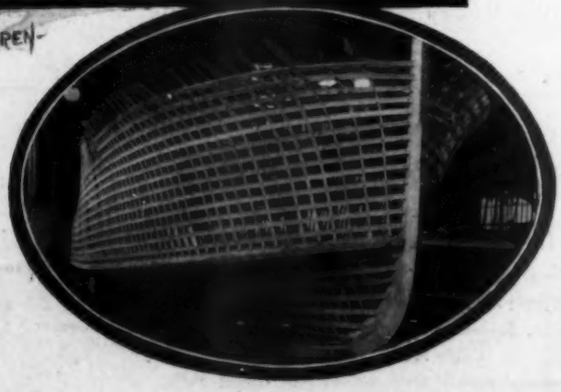

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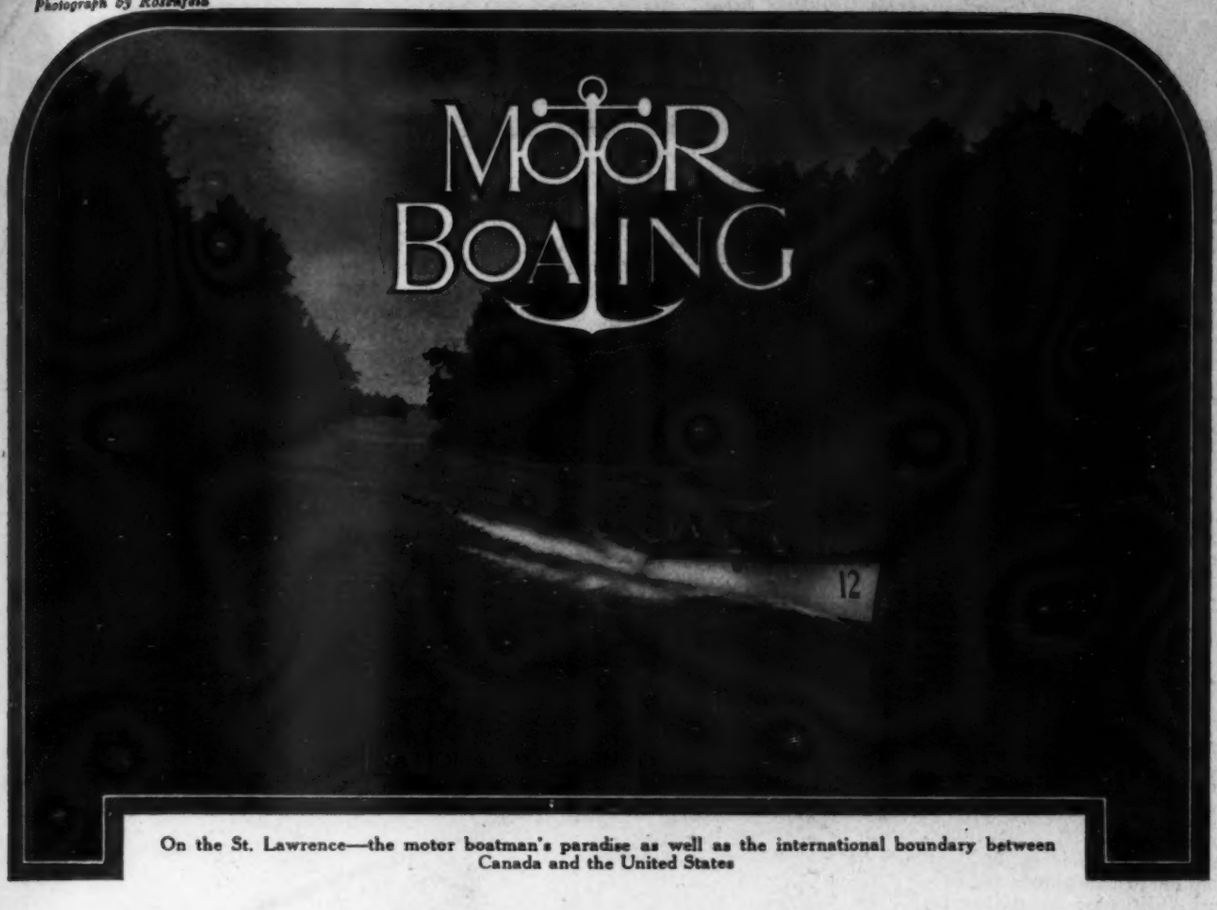


On the St. Lawrence—the motor boatman's paradise as well as the international boundary between Canada and the United States

Why Bar the Motor Boatmen?

Obsolete Laws and the Board of Supervising Steamboat Inspectors Apparently Are Preventing Many Qualified Yachtsmen from Becoming Officers of the New Merchant Marine Fleet

IF you have served on the deck of a sea-going vessel for a certain length of time, no matter whether it be on a liner, tramp, lumber-carrier or a nondescript, you are eligible for an officer's berth on one of the many vessels which are now building to help win the war.

It makes little difference in what capacity you have served or whether your position was one of much or little responsibility or whether you know, or care an iota, anything about navigation, seamanship or any of the many other finer points about your ship, yet you are eligible just the same.

But, if you have been a yachtsman or motor boatman all your life and have followed the sea because you love it and are more intensely interested in it than anything else which you could have chosen for your hobby, have had no end of experience on pleasure motor craft, have studied all phases of seamanship from a scientific standpoint and become an expert not only in coastwise navigation but in the higher branches of the astronomical science as well, yet you, you who perhaps may be a thousand times more qualified to take a ship to sea than the first class of persons mentioned, are barred in cold blood from even a chance to get aboard or at least to prepare yourself in order to prove yourself worthy to serve on one of the new ships which are going to make Uncle Sam's Merchant Marine second to none on the waters of this great globe of ours.

In other words, if you are a licensed man or even an unlicensed man with a sea-going experience (?), your path to the bridge will be one of roses. But if you are a yachtsman, no matter what your qualifications and knowledge may be, you are doomed. And all of this in spite of an already 100 per cent. shortage of sea-faring officers and none of the new ships yet in commission.

Many ask, who is responsible for this state of affairs? Fundamentally the law is, but the Board of Supervising Inspectors as well as the local inspectors are given such broad powers that it is within their jurisdiction to do as they see fit. It is an open secret that the interests of "steam" have predominated on the Board for years and years. Naturally, at this critical time they still have the upper hand and appear to be using it to the detriment of other well-deserving interests.

Furthermore, if a yachtsman for any reason has had the necessary sea experience to entitle him to try for an officer's position, he must pass a written examination given by these same "steam" interests. He is required to answer innumerable questions compiled by all kinds of "expert" talent, which may require several days' time. On the other hand a licensed man who wishes to have the grade of his license raised or even an unlicensed man seeking a license for a deck officer's berth and who has had the amount of commercial experience which these powers-that-be deem as necessary and sufficient will be granted his license without being obliged to go through all the routine to which others are subjected. It seems to be a case of brains, ability and qualifications versus pull and favoritism and the latter appears to be winning hands down.

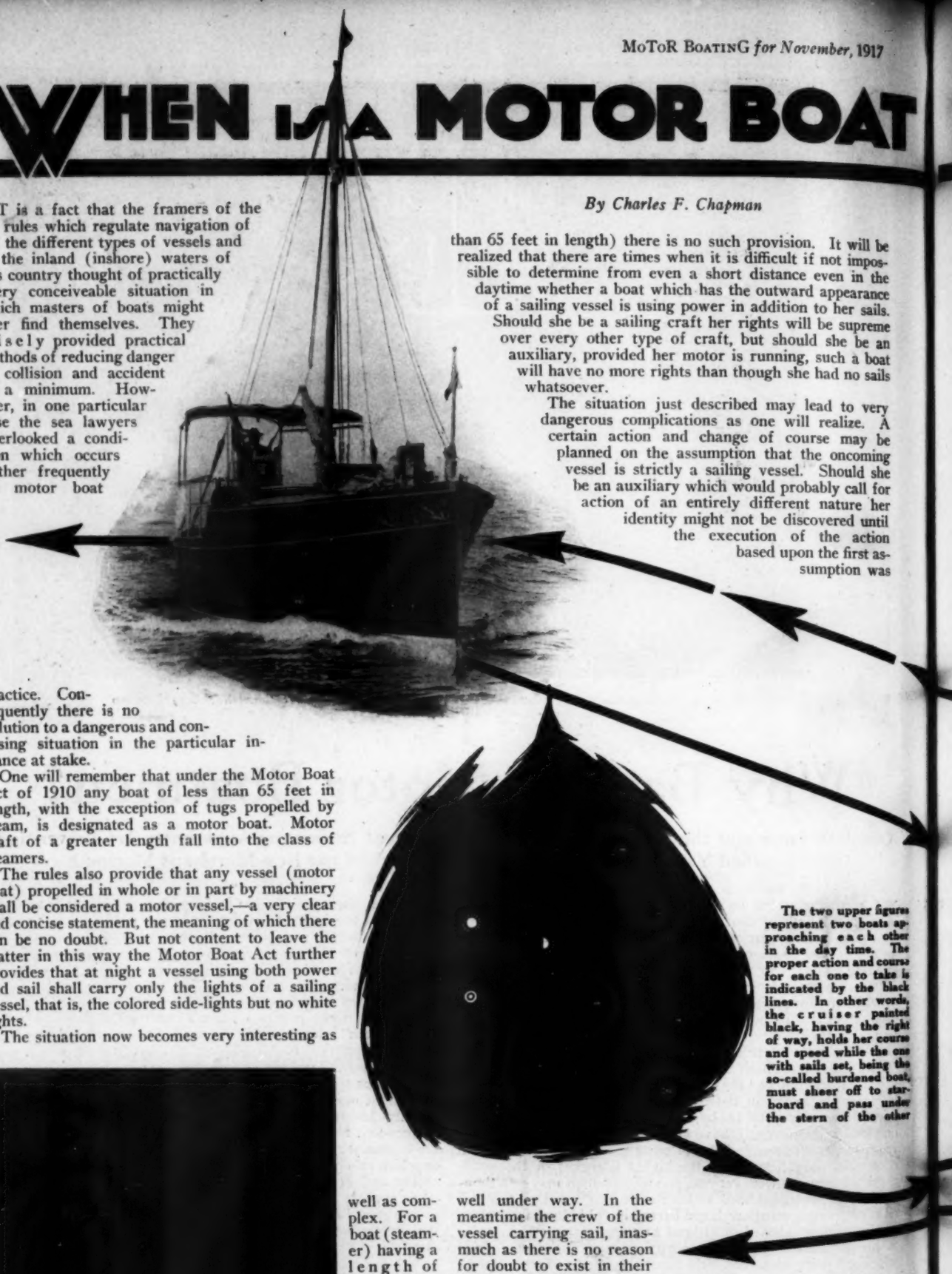
The Board of Supervising Inspectors who have charge of all such matters together with the local inspectors in the several districts who are responsible to the Board, consist of a number of elderly gentlemen brought up in the old school when steam and sail were the only two methods of propulsion. Not being particularly anxious about their jobs and surely not overworked, they seem to have failed to keep abreast of the times until the internal combustion engine and motor boat had become such a factor and so powerful that suddenly they realized that something must be done or else their friend "steam" and its allied interests would be driven to the outer corners of the ocean and they might some day be without the means of livelihood. Surely the easiest and perhaps the safest method of handling the whole matter would be to "Close the Doors"

(*Continued on page* 58)

WHEN IS A MOTOR BOAT

By Charles F. Chapman

IT is a fact that the framers of the rules which regulate navigation of the different types of vessels and on the inland (inshore) waters of this country thought of practically every conceiveable situation in which masters of boats might ever find themselves. They wisely provided practical methods of reducing danger of collision and accident to a minimum. However, in one particular case the sea lawyers overlooked a condition which occurs rather frequently in motor boat practice. Consequently there is no solution to a dangerous and confusing situation in the particular instance at stake.



One will remember that under the Motor Boat Act of 1910 any boat of less than 65 feet in length, with the exception of tugs propelled by steam, is designated as a motor boat. Motor craft of a greater length fall into the class of steamers.

The rules also provide that any vessel (motor boat) propelled in whole or in part by machinery shall be considered a motor vessel,—a very clear and concise statement, the meaning of which there can be no doubt. But not content to leave the matter in this way the Motor Boat Act further provides that at night a vessel using both power and sail shall carry only the lights of a sailing vessel, that is, the colored side-lights but no white lights.

The situation now becomes very interesting as well as complex. For a boat (steamer) having a length of more than 65 feet a special day mark is specified when the boat is under both sail and power, for a motor boat (less than 65 feet in length) there is no such provision. It will be realized that there are times when it is difficult if not impossible to determine from even a short distance even in the daytime whether a boat which has the outward appearance of a sailing vessel is using power in addition to her sails. Should she be a sailing craft her rights will be supreme over every other type of craft, but should she be an auxiliary, provided her motor is running, such a boat will have no more rights than though she had no sails whatsoever.

The situation just described may lead to very dangerous complications as one will realize. A certain action and change of course may be planned on the assumption that the oncoming vessel is strictly a sailing vessel. Should she be an auxiliary which would probably call for action of an entirely different nature her identity might not be discovered until the execution of the action based upon the first assumption was well under way. In the meantime the crew of the vessel carrying sail, inasmuch as there is no reason for doubt to exist in their minds as to the proper action of the other (motor) vessel as well as their own, may have changed their own course (probably correctly) in a manner which will be exactly contrary to the expectations of those on the vessel carrying no sails. Both boats may give way in the same direction at the same instant presumably to allow the right-of-way boat to hold her course and speed. A collision under such circumstances is almost inevitable.

The common sense action in a situation where two boats are approaching each other in the daytime, one of which is operating under power alone and the other under both sail and power,

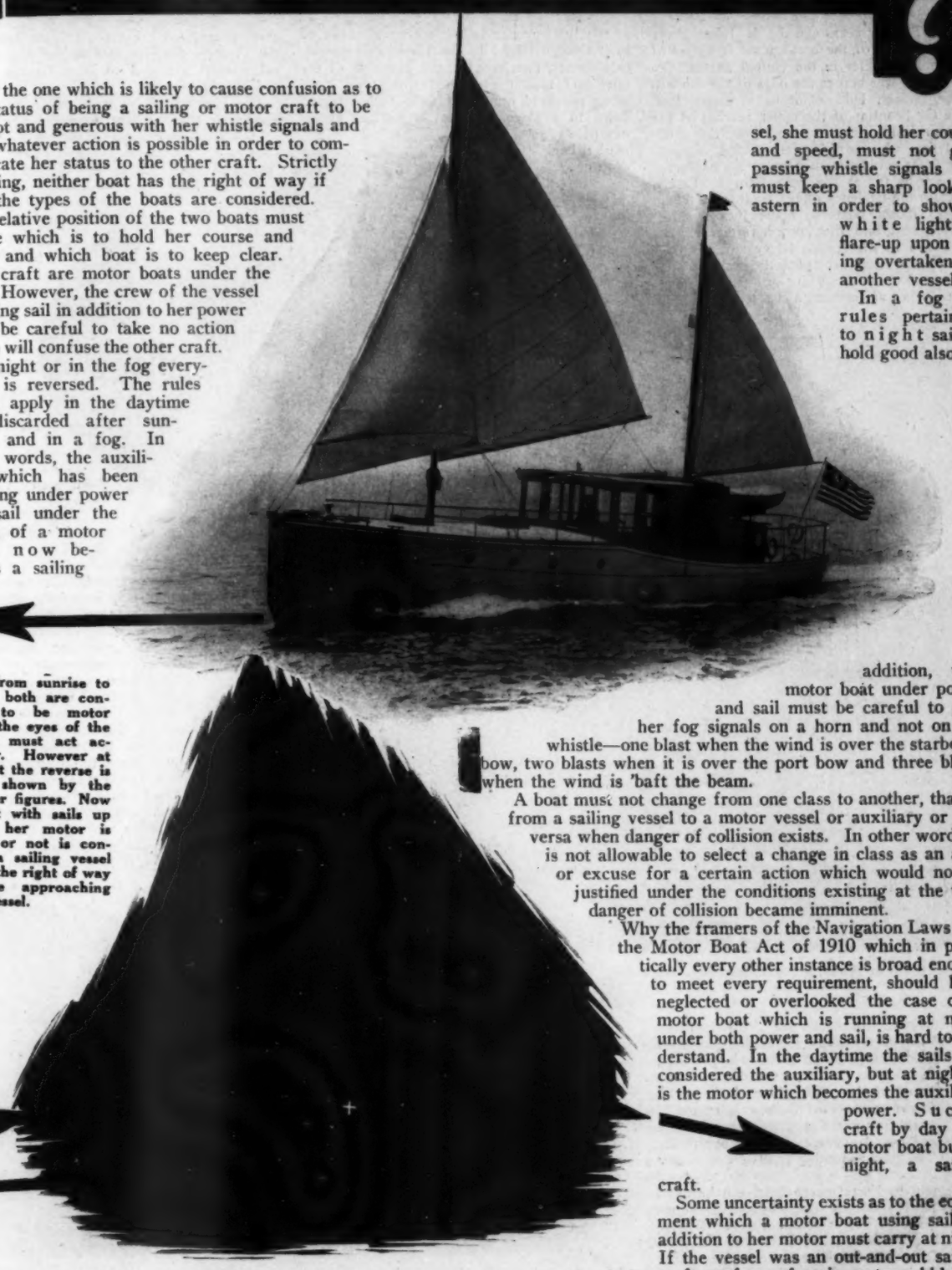
A vessel of this type, not being equipped with a motor, has the right of way in every instance except when she is overtaking another vessel

The two upper figures represent two boats approaching each other in the day time. The proper action and course for each one to take is indicated by the black lines. In other words, the cruiser painted black, having the right of way, holds her course and speed while the one with sails set, being the so-called burdened boat, must sheer off to starboard and pass under the stern of the other

NOT A MOTOR BOAT?

is for the one which is likely to cause confusion as to her status of being a sailing or motor craft to be prompt and generous with her whistle signals and take whatever action is possible in order to communicate her status to the other craft. Strictly speaking, neither boat has the right of way if only the types of the boats are considered. The relative position of the two boats must decide which is to hold her course and speed and which boat is to keep clear. Both craft are motor boats under the law. However, the crew of the vessel carrying sail in addition to her power must be careful to take no action which will confuse the other craft.

At night or in the fog everything is reversed. The rules which apply in the daytime are discarded after sundown and in a fog. In other words, the auxiliary which has been working under power and sail under the status of a motor vessel now becomes a sailing craft and follows all the rules of the road as applied to the latter type of vessels. While it was the duty of the auxiliary in the daytime to use every means to communicate her status to the strictly power vessel, at night she must follow the reverse order. She must exercise great care not to permit an approaching motor craft to know that she too is operating under power. She is carrying only the lights for a sailing vessel and must act accordingly.



craft. From sunrise to sundown both are considered to be motor craft in the eyes of the law and must act accordingly. However at night just the reverse is true as shown by the two lower figures. Now the craft with sails up whether her motor is running or not is considered a sailing vessel and has the right of way over the approaching motor vessel.

At night a vessel under power and sail is the privileged vessel, she must hold her course and speed, must not give passing whistle signals and must keep a sharp lookout astern in order to show a white light or flare-up upon being overtaken by another vessel.

In a fog the rules pertaining to night sailing hold good also. In addition, the motor boat under power and sail must be careful to give her fog signals on a horn and not on the whistle—one blast when the wind is over the starboard bow, two blasts when it is over the port bow and three blasts when the wind is 'baft the beam.

A boat must not change from one class to another, that is, from a sailing vessel to a motor vessel or auxiliary or vice versa when danger of collision exists. In other words, it is not allowable to select a change in class as an alibi or excuse for a certain action which would not be justified under the conditions existing at the time danger of collision became imminent.

Why the framers of the Navigation Laws and the Motor Boat Act of 1910 which in practically every other instance is broad enough to meet every requirement, should have neglected or overlooked the case of a motor boat which is running at night under both power and sail, is hard to understand. In the daytime the sails are considered the auxiliary, but at night it is the motor which becomes the auxiliary power. Such a craft by day is a motor boat but at night, a sailing craft.

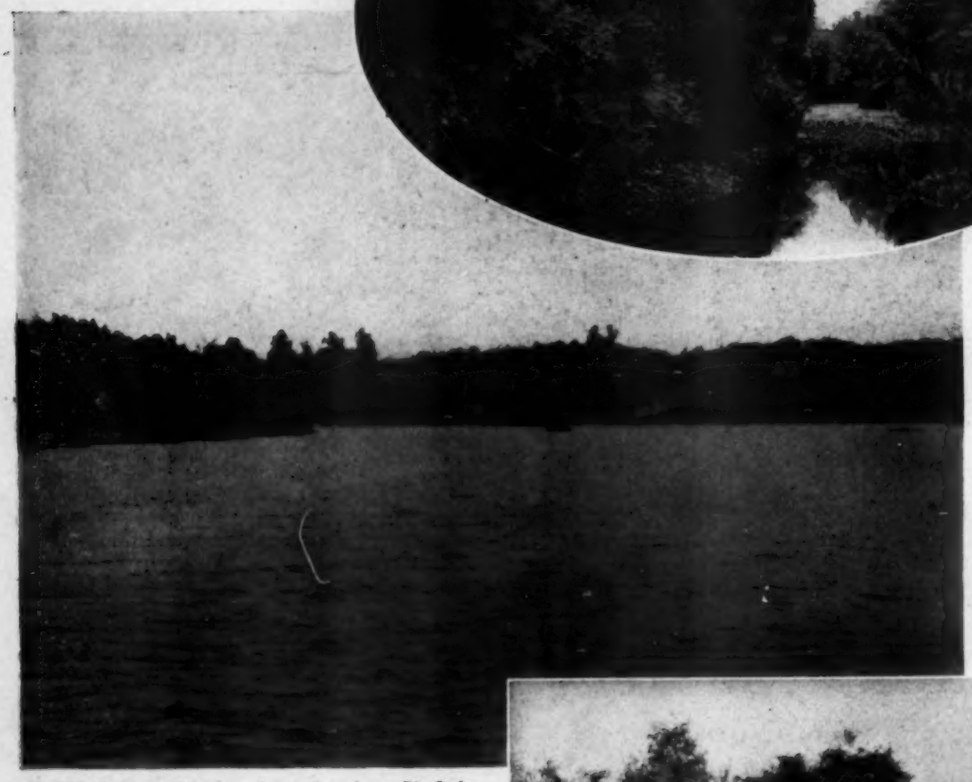
Some uncertainty exists as to the equipment which a motor boat using sails in addition to her motor must carry at night. If the vessel was an out-and-out sailing craft, no form of equipment would be required by law, not even a life preserver. Therefore, it is probable that under a strict interpretation of the law, no penalty could be imposed if an auxiliary at night did not have its full quota of equipment of life preservers, pilot rules, whistle, fog bell and fire extinguishers on board. However, Safety First is the best rule even if you own an auxiliary. Go even further than the law requires. An anchor and cable, compass, lead line as well as a good supply of tools and spare parts for the motor are as essential as the equipment required by law.

Florida's Finest Inland Waterway

The St. Johns River With Possibilities Enough for an Entire Winter of Cruising and Exploring —A Body of Water Generally Overlooked by Most Motor Boatmen

NOT many years ago the St. Johns River was one of the best-known stretches of inland water in the United States. To be sure this was before the days of the modern motor cruiser, but numerous steamers then made the beauties of the upper reaches of the river accessible to everyone, while the privileged few who owned steam yachts of moderate draft could use such boats for exploring the river as far as Big Lake George. Lately, however, the tendency of the southward bound fleet of motor boats to make Jacksonville a brief visit and then proceed hurriedly southward to the Indian River and the Florida Keys has prompted the writer to try and show these birds of passage that they are missing a real treat when they fail to make the St. Johns trip.

A typical Florida creek. Note the dense growth and the water hyacinth floating on the stream



The St. Johns at Astor, a few miles above Big Lake George

To thoroughly explore the entire St. Johns River region would be an entire winter's task, though a pleasant one, but ten days or two weeks spent in the river above Jacksonville and a day or so at Fort George Inlet would give a cruising party a good idea of the region and would incidentally give opportunity for some good shooting and fresh water fishing.

The trip to Fort George Inlet can be most conveniently made on the way south before the St. Johns River is reached, a side trip of some three or four miles from where Sisters Creek Canal crosses Fort George River, taking the visitor to a good anchorage off an old plantation on the north end of Fort George Island. The channel down the Fort George River is easy to find and is amply deep for boats that can negotiate the Inside Passage south. Favor the left bank of the river immediately after leaving the canal then after three or four hundred yards take the center and as soon as the Homestead dock is in plain view favor the right bank to the anchorage just above the dock. If you want to go down to the Inlet proper follow the north shore of Fort George Island to the Island's northeasterly corner, then cross to the east side of the inlet and take the channel which lies close along the sand dunes of Little Talbot Island down to a place opposite an isolated clump of palms on the west bank. Anchor near the Little Talbot shore opposite this clump of palms. The inlet below this point has shifting sand bars which should be investigated with the small power tender before trying to go further in the cruiser. The bathing in the inlet is splendid. The neighboring islands are game preserves, however, and one should not go hunting on them, so the chief charms of the place are the beauty of the scenery, the fine bathing and the historical interest attached to Fort George Island and the Homestead.

The Homestead, as it is called, is an old plantation that at one time belonged to a notorious pirate, slave trader, and generally undesirable character called Kingsley. To tell the story of his life, crimes, and somewhat romantic marriage to the African Princess Momhannah would be out of place in an article of this kind, but you should by all means get the yarn from the people of the island. It is an interesting story especially when told on the spot, with the proper stage setting of acclimatization quarters, prisons, stocks, and other paraphernalia of those gentlemen who sought fame and fortune under the Jolly Roger. Besides the Homestead there are other more modern houses on the island and these are connected with the Homestead by shell roads lined with fine avenues of oaks and palms. These avenues running through the dense, tropical growth on the island make it more genuinely beautiful than many of the so-called show places of the state.

The small tender and the Evinrude outfit in one of the springs proper at Silver Springs on the banks of Big Lake George

After leaving Fort George the cruiser will have to go up Fort George River to the place where the Sisters Creek Canal was left and then follow the well-marked channel through to the St. Johns and up that river to Jacksonville. From its mouth to Jacksonville the river

is of no particular interest except for the lumber mills, ship yards, and other industrial enterprises going on there, but above Jacksonville lies what is an almost ideal cruising ground for the motor boatman. From Jacksonville to Palatka, fifty-six miles, the river is both wide and deep and along its banks there are many beautiful villages. Mandarin, Hibernia, Magnolia, Green Cove Springs, and Federal Point each invite a few hours stay while Hibernia, Magnolia, and Green Cove Springs offer golf, tennis and swimming to make the visitor's stay longer. This part of the river has numerous tributaries, one of which at least, Black Creek, can be ascended for some fifteen or twenty miles on the cruiser. It is well worth one's while to take a run up one of these tributaries either in the cruiser or the tender. The scenery will be found unusual and beautiful and there should be some good large-mouth black bass fishing. Here it might be of interest to mention that the water-hyacinth which grows so profusely in the upper St. Johns and all its tributaries is not a native of Florida, but was introduced into the river from a water garden near Palatka within the memory of people now living. The plant is remarkably beautiful, especially when in flower, but it is a great nuisance and hindrance to navigation. Constant spraying of the plants with poisonous chemicals in their breeding places in the creeks now keeps them killed off to a certain extent, but before the days of this systematic campaign the writer has seen even the wide lower reaches of the river blocked with the plant.

Above Palatka the river suddenly changes character, instead of being wide and fairly straight it becomes narrow and tortuous, the banks instead of being mere blue lines along the horizon are now close at hand, and the orange groves, villages and other features of the shore can be easily seen as one passes. San Mateo, five miles above Palatka, is typical of these up-river villages and so is Welaka, some twenty miles further up. Just above San Mateo lies the entrance to Dunnes Creek. The entrance is shown on the chart, but the creek itself is uncharted though navigable to Crescent Lake and Crescent City. Both lake and town are worth seeing and those who can spare the time are advised to make the trip. Crescent City has the unusual distinction of occupying a ridge forming a natural dam between two lakes of widely different level. In other respects it differs little from other attractive Florida towns. When Welaka is reached a visit should be made to the spring. These large sulphur springs are quite common in this part of Florida and offer splendid bathing. The Oklawaha River enters the St. Johns just above Welaka. This river is remarkable in that most of its large flow of crystal-clear water comes from a single huge sulphur spring, the well-known Silver Springs near Ocala. The scenery along the banks of the river was once beautiful, but the removal by lumbering interests of the great cypress trees that once arched over the narrow channel has spoiled the stream for those who knew it at its best. The Oklawaha is narrow, very crooked, and full of eel grass. Those who wish to go up had better take the steamer from Palatka or Welaka.

Above the mouth of the Oklawaha lies Little Lake George, then Drayton Island and finally Big Lake George, which is a really large sheet of water though not over eight or ten feet deep in the center and very shallow along the margin. Salt Spring and another Silver Springs lie on the west bank of the lake, though Salt Spring is several miles north of the position assigned to it on the chart. Silver Spring is easily found and should be seen. The spring run can be best negotiated in a row boat or canoe, but the writer has had a detachable motor outfit up to the spring itself. There is a big volume of water from the spring, but it does not all come from one opening in the ground, there are three large boils at the head of the run, and a number of little ones only five or six feet in diameter in the bed of the run and even out in the lake itself. The best way to find the spring is to anchor off the white house just south of the spring and inquire the way there. Do not go close to shore in your cruiser, but anchor half a mile or so out. The lake is very shallow near shore, and there are snags to be avoided.

Here and there the channel may be a bit hard to find, especially when one or two lakes have to be crossed, but the careful use of chart and lead line should obviate all real difficulty. Care should also be used in avoiding shad nets and set lines or trout lines, as the local fishermen call them, as both things will ball up a propeller in a perfectly hopeless way and also cause much bad feeling to ensue between the fisherman and the cruising party. Lake Monroe and the town of Sanford are generally considered to be the head of navigation on the St. Johns River.

Robin Hood III, built in South Jacksonville and engined by the N. Y. Y. L. & Engine Co.

Astor was once a prosperous orange-growing village, but the "Freeze" did for it

A picturesque ferry on the upper St. John. This might have been the setting for Joel Chandler Harris' immortal "Bre'r Rabbit has fun at the ferry." "Oh! de rope is long, ketch a holt, ketch a holt. Oh! de rope is long, ketch a holt. A dime for de man and a dime for the mar' and a thrip for de little grey colt"

Aviators and Aviation of the Future

The Application of Aircraft for Commercial Purposes to be Studied by the Aero Club of America—The Possibilities of Air Routes for the Delivery of Mail and Other Matter Requiring Speed

By Henry Woodhouse

RECENTLY the Aero Club of America announced that steps were being taken to form an International Commission on Civil Aeronautics, which is to study the possible application of aircraft for commercial purposes and to outline plans for the employment of thousands of military aeroplanes and aviators after the war.

Immediately from every part of the country young men who are training as military aviators inquired eagerly for additional information.

"This means a whole lot to me—I'll be able to stay in aeronautics," was the sentiment expressed in each case.

"I couldn't go back to the slow grind," was the way others express it.

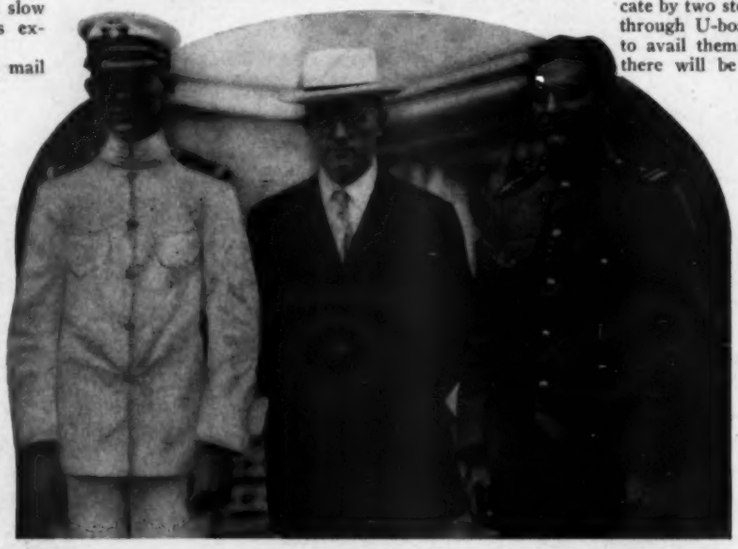
"I'd sooner drive an aero mail bus and fly than to go back to the bank and have my car with the chauffeur and my yacht and all that," said a wealthy young banker.

Life seems slow in many ways after one has been in the aeronautic movement and the thousands of American young men who are training in the United States, Canada, England, France and Italy can be counted on to continue their connection with the aeronautic movement in conducting and operating aerial lines and for sport.

That there will be work for all of them there is little doubt. A preliminary plan of air routes which the U. S. Post Office would like to establish to save time in delivering mail to certain points far to reach by rail, boat or automobile, shows about 200 air lines. Supposing it takes only an average of eight aviators for each line, there will be employment for 1,600 aviators, without counting the administrative personnel to operate the air lines.

The Atlantic will be crossed before many months have gone by. It is the one obstacle in the way of delivering the tens of thousands of aeroplanes needed to srtike Germany through the air, therefore it will have to be done. Now that the authorities are turning to it the general opinion is that the flight is really feasible and that with the improvements that will follow the first flight, crossing the Atlantic by air will be comparatively easy.

If the war lasts one year after the first trans-Atlantic flight has been made there will be delivered at least ten thousand warplanes by air, and several thousand young men will thus become trans-Atlantic air pilots. When the war is over they will be the pilots of the "Aerial express" that will leave hourly for different parts of the globe with mail and express matter. It will mean a whole lot to firms to have mail and express matter delivered across the Atlantic thirty or forty hours after mailing it—and while for a time they will send everything in duplicate, one by aeroplane and one by steamer, just as they now send in duplicate by two steamers, to meet a possible loss through U-boat warfare, they will be glad to avail themselves of the air lines. And there will be as many passenger-carrying lines as there will be mail-carrying lines; and there will be private air wagons of business firms, and thousands of machines used for scientific purposes, surveying, map making, exploring, coast guard and life saving service, railroad inspecting, etc. And, of course, there will be thousands of machines used for sport and pleasure.



Ensign H. P. Davison, Jr., N.R.F.C., Major General H. P. Davison, head of the American Red Cross, and Lieut. Trubee Davison, organizer of Aerial Coast Patrol Unit No. 1

As this is being written, cable and telegraph despatches give indications of coming developments.

One day early in October fourteen Italian Caproni warplanes started together from near Milan, flew to the Apennine Mountains in a gale and arrived in a body near Rome. There they rested a while and then flew to their taking off camp on

the Adriatic shore and thence to Dalmatia and Montenegro and home.

The squadron afterward flew together something like 1,000 miles without failure on the part of any machine or any hitch.

Each of these Caproni machines can lift two tons of useful load.

From London comes the report that as soon as the war is ended aerial navigation plans which are being drawn up by Lord Northcliffe's Committee, appointed by the Government, will be put in operation step by step, and the ends of the world will be brought together by long-distance aeroplane service.

The report states that the trans-Atlantic flight is only a matter of months.

The bridging of the Atlantic by aeroplanes will be only the beginning of things. Plans are being laid for regular air service, not only in America, but to India, South Africa and Australia. If they are carried out Melbourne will be brought within eight and one-half days of London; India, three days, and Capetown four or five. The bee line to Capetown would of course cross the Sahara, but the winds of the desert raise obstacles to this route, and the route chosen is by way of Malta, Cairo, Khartoum and Victoria Falls.

The *London Daily Express* says that the machine which will be used for these world journeys will be of the type developed by Handley Page, will travel 200 miles an hour, will have multiple engines to avoid the necessity of descending if one engine gives out, will carry four or five passengers, and will be able to cover about 3,000 miles in fifteen hours. Two pilots will take turns at the wheel. There will be comfortable inclosed quarters and the journey will not be more exhausting than a railway trip of similar duration.

A despatch from Dayton states that Orville Wright is concentrating efforts in developments intended to make flying inexpensive, safe, and popular.

"I'm experimenting with wing models to increase the efficiency of plane surfaces," Mr. Wright is reported as stating. "Big battleplanes don't interest me very much, except that I know they are needed to end the war, so we may tackle the aeroplane for the uses of peace.

"What is wanted is a comparatively low powered machine, say, of 100 h.p., whose wing surfaces are so efficient, and whose inherent stability is so high it will not require a big field to alight in.

"After the war flying will become safe, popular and comparatively cheap. As soon as the war is over I expect to see the whole country mapped out with air highways. Along these routes, say every seven miles, there will be alighting stations and hangars.

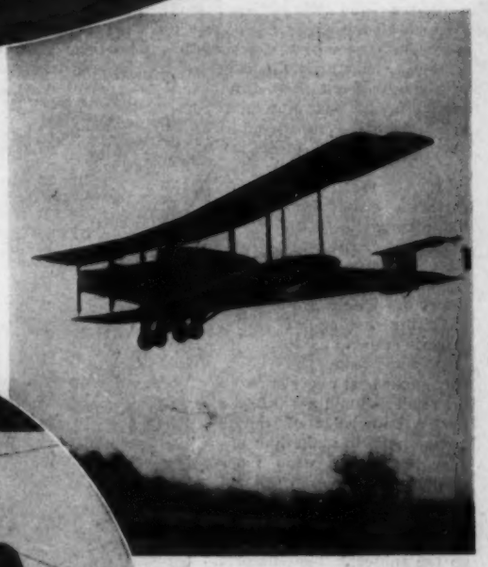
"With these aerodromes so near to each other as this, it always will be easy for an aviator to make a safe landing in case of engine trouble. While flying a half to a mile above ground—a moderate altitude nowadays—it will be easy to glide to safety if you are stalled midway between stations.

"We already have an air route between here and Indianapolis with aerodromes seven miles apart, and I am looking forward to the rapid extension of this system."

Flying boat of the Yale Unit starting on a flight

At the left: Edward R. Thomas with H. D. Kentner, returning from a fishing trip in Florida. Several fish were caught from the flying boat

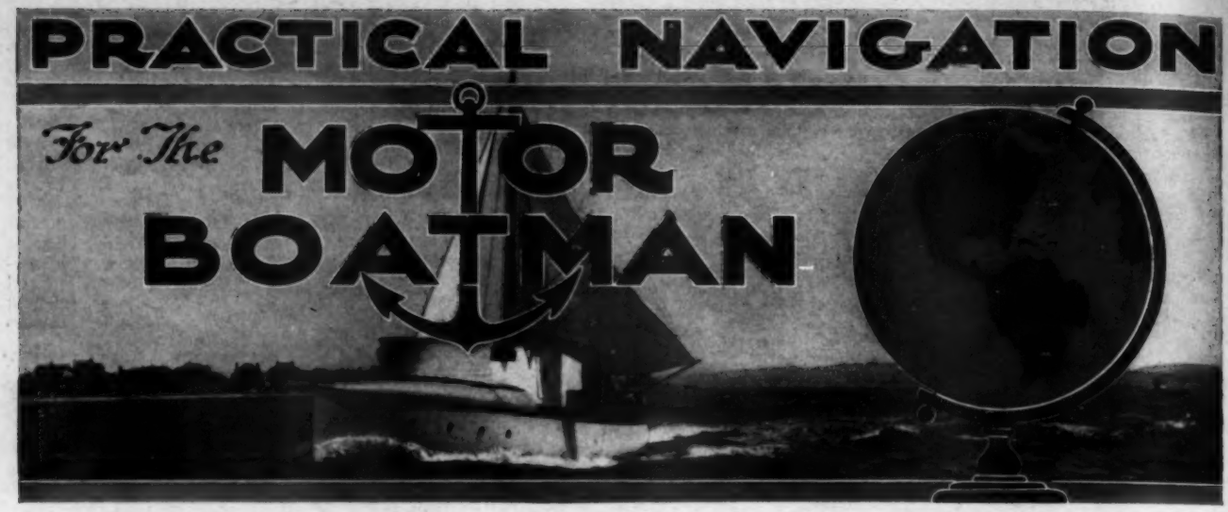
At the right: A British Handley-Page biplane equipped with two 280 h.p. motors. This plane is driven by an American boy, Cliifford B. Prodger, and has carried 21 passengers in a single flight



Franklin K. Lane, Jr., son of Secretary of Interior Lane

PRACTICAL NAVIGATION

For The MOTOR BOATMAN



By W. Mack Angas

IN SEVEN CHAPTERS—Part I

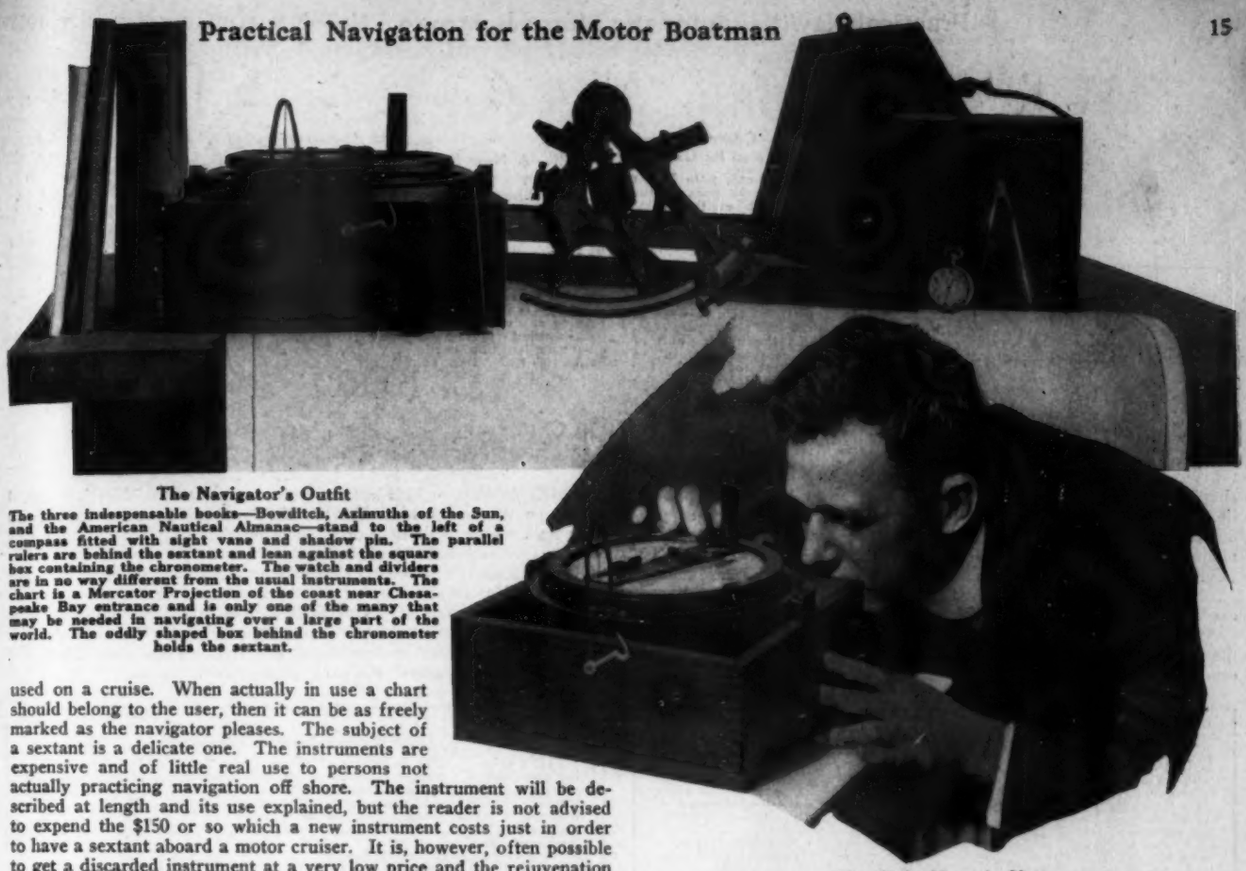
TO the out-and-out landsman the word "navigation" probably means little more than the definition to be found in pocket dictionaries—"the art of directing and managing a ship"—and in a broad sense this idea possessed by the landsman is correct. To the average motor boatman, on the other hand, the same word calls to mind the science of nautical astronomy, and this science he regards with awe, as something deeply mysterious that only a privileged few can understand. As is so often the case the facts lie midway between these extremes, and while the landsman has confused seamanship and navigation, the motor boatman has failed to recognize that the very fair knowledge of pilotage he doubtless possesses, is realy a knowledge of one branch of navigation, and that by some study this knowledge can be extended to cover all the branches of the science that are commonly practiced at sea. The object of this series of articles then is to help the amateur to thus extend his knowledge of navigation in the seaman's sense of of the word, not only that he may use his boat in greater safety and comfort, and take pleasure and pride in his ability to navigate his craft; but that he may also get some insight into the methods used in navigating large vessels. The present rules of the steamboat inspectors wisely prohibit the issuing of officer's licenses to men who have had only small-boat experience, so the reader should not imagine that a knowledge of simple navigation will make him eligible for examination for even the position of third mate of ocean vessels, but this fact should not prevent the real boatman from taking up the subject. The subjects dealt with in these articles will generally be applicable to navigation as practiced in cruising in other than strictly inland waters, only a relatively small amount of space being devoted to methods of work that pertain strictly to long voyages.

The articles will not constitute a complete treatise on navigation. There are so many excellent works of that nature on the market—Epitomes, as seamen call them—that to add another to the already overloaded shelves of the dealers would do no good. It is merely hoped that what is to follow will get amateurs interested in what the writer has found to be a most fascinating hobby, and incidentally a most useful one. The writer also hopes to clear up some of the parts of our standard American epitome, "Bowditch's American Practical Navigator," that are hard for the beginner to understand. The reader who plans to follow this series of articles through will need a copy of Bowditch, which can be obtained from any dealer in nautical supplies and instruments for $2.25, and later on an American Nautical Almanac for 1918 and a set of Azimuth Tables will be needed. The last two books will not be needed for the first four of these articles, but the Bowditch will be requisitioned next month because of the invaluable mathematical tables it contains and also because of the complete though somewhat mathematical discussion of the principles of navigation to be found there. These three books then comprise the beginner's library, as far as navigation, pure and simple, is concerned. For treatment of subjects that come under seamanship, the rules of the road, navigation laws and so forth, the reader is referred to "Practical Motor Boat Handling, Seamanship, and Piloting," by C. F. Chapman, published by MoToR BoatinG. References will be given in these pages to some subjects that are properly considered as part of the subject of "piloting" and hence have been taken up in Com. Chapman's book, and such subjects will receive a briefer discussion here than they might otherwise have got, but it is hoped that no books other than the three mentioned above will be really needed in connection with these articles.

Now for the instruments that will be necessary. The ordinary equipment of a cruising motor boat includes charts, a compass, parallel rulers or a course protractor, and either a pair of compasses or dividers—perhaps both. It will be assumed that the reader at least has access to such an outfit and for the present no additions will have to be made to it. Later on a few charts of a kind not commonly carried on small craft will have to be examined, but those who can borrow them need not buy them unless they are actually to be

Standard Compasses

The instrument on the left is mounted on the after cabin house of an ocean-going lighthouse tender. The location is probably ideal as far as getting the instrument out of reach of disturbing magnetic influences is concerned, it is, however, to say the least, an inconvenient location for the instrument. The right hand instrument is that of the Norwegian tramp whose steering compass is shown on page 17. The standard on this vessel is on the bridge forward of the steering compass and can therefore be readily used by the watch officer. The doors into the base of the binnacle give access to the racks of magnets which counteract deviation. The large spheres are soft iron and correct what is called the "quadrantal error."

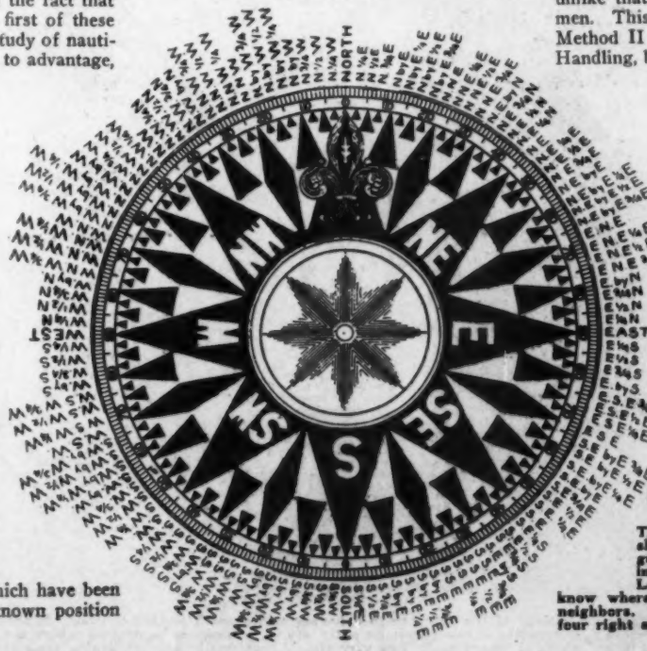


The Navigator's Outfit

The three indespensable books—Bowditch, Azimuths of the Sun, and the American Nautical Almanac—stand to the left of a compass fitted with sight vane and shadow pin. The parallel rulers are behind the sextant and lean against the square box containing the chronometer. The watch and dividers are in no way different from the usual instruments. The chart is a Mercator Projection of the coast near Chesapeake Bay entrance and is only one of the many that may be needed in navigating over a large part of the world. The oddly shaped box behind the chronometer holds the sextant.

used on a cruise. When actually in use a chart should belong to the user, then it can be as freely marked as the navigator pleases. The subject of a sextant is a delicate one. The instruments are expensive and of little real use to persons not actually practicing navigation off shore. The instrument will be described at length and its use explained, but the reader is not advised to expend the $150 or so which a new instrument costs just in order to have a sextant aboard a motor cruiser. It is, however, often possible to get a discarded instrument at a very low price and the rejuvenation of such instruments will be taken up in a later article. The writer knows that such old instruments can do good work, for his own sextant was rebuilt at home and now gives results that compare favorably with those obtained with new instruments of medium price. A chronometer will not be needed, the instrument will be discussed and described, but for the purpose of the student a good watch will answer all requirements. An illustration accompanying this article shows the instruments ordinarily used in navigation, also the three books mentioned above. It is not an imposing array, but with this simple outfit all the ordinary processes of navigation can be illustrated, and indeed practiced at sea. As the amateur gains in experience and interest he will doubtless add both to his collection of books and instruments, but the beginner's necessities have all been mentioned.

Turning from the matter of books and equipment to the subject of navigation itself we find that it is divided broadly into two parts, the first comprising dead reckoning and the methods of finding the course and distance from a vessel's position to a certain fixed destination, and the second consisting of practical nautical astronomy or the science of finding a vessel's location from observations of the sun or some other heavenly body. Because of the fact that a complete understanding of the first of these subjects is necessary before the study of nautical astronomy can be undertaken to advantage, the attention of the beginner will be first directed to dead reckoning and that subject will naturally lead to a consideration of the mariner's compass, without which dead reckoning simply could not be worked. Here let it be said that locating a vessel by dead reckoning is not merely making an intelligent guess as to her position; it is finding the position of the vessel by either graphical means, or computation, from a knowledge of the last definitely determined position of the vessel and the best obtainable information as to the distances and directions subsequently sailed. The unavoidable inaccuracy of a position by dead reckoning is due to the difficulty of getting accurate information as to ocean currents. compass errors and other factors which affect the lengths and directions of the courses which have been sailed from the last fix, as a known position is called by navigators.



The Sight Vane in Use

The photograph is self explanatory. It should be remembered that bearings taken with the sight vane are in error by both variation and deviation of the compass, and that the deviation depends upon the course upon which the vessel was running when the bearing was taken and not upon the bearing of the distant object. It is an excellent plan to place the compass on a power boat so that the sight vane may be used, but this is seldom done.

The beginner should waste no time in making himself thoroughly familiar with the compass, especially with the graduations of the two types of cards in common use, and with the proper way of boxing the compass, as naming the points of the card is called. The compass will not be described here, nor will space be devoted later to descriptions of other instruments with which all boatmen are familiar. The matter of boxing the compass and some such kindred subjects, however, will be treated at some length, as the knowledge that will enable a boatman to use a compass intelligently in inland navigation will hardly suffice for the needs of the navigator who works outside.

Figure 1, of this article, shows an ordinary compass card with all the points and quarter points properly named. It will at once be noticed by many that the quarter points are named in a way which is unlike that in common use among many seamen. This method of boxing the compass is Method II described in Practical Motor Boat Handling, but it is the only method that should be used by the navigator, the reason being that when this method of naming the points is used, a check is obtained upon some phases of working dead reckoning with the Bowditch tables. To learn to box the compass, parrot fashion, would be a real tax on the memory, but a few minutes' investigation should enable the reader to discover the system used in naming the points, and when once the system is mastered the rest is easy. It is not enough to be able to name the points and quarter points in regular order, beginning at north and going round the card clockwise; the navigator

Fig. 1—The Points and Quarter Points of the Mariner's Compass

The system of naming quarter points shown here should be used by the navigator, as this is the system used in making the traverse tables in Bowditch. Learn to "visualize" the card and to know where each point lies with respect to its neighbors. The degrees on this card divide it into four right angles, which is the old style of graduating the card in degrees.

Fig. 2—Compass Variation and Its Cause

The magnetic pole is not at the north pole of the earth, but at the point marked with a cross. The compass points at the magnetic pole and *not* at the north pole. Each arrow shows how the compass would point in the location of the arrow, sometimes this is west of north and sometimes east. When the north point of the compass points to the west of north the variation is said to be westerly.

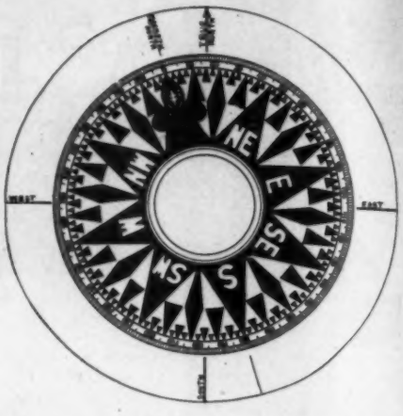


Fig. 3—A New Style or Navy Compass Card Showing the Effect of 1½ Points of Westerly Variation

The degrees on this card run clockwise from zero at north to 359° which lies 1° to the west of north. It is unnecessary to give any direction by name when giving a course on this card. South is 180°, and so forth.

should know where each whole point lies on the card, and which points lie to the right and left of it. Of course, before this state of proficiency is attained the student will know that there are thirty-two whole points, eight points lying between the "cardinal points," as North, East, South and West are called; and the fact that the "intercardinals"—N. E., S. E., S. W. and N. W. lie four points from their adjacent cardinals will also be well drummed in.

After having mastered the naming of the points and their location the beginner should next make himself thoroughly familiar with some other features of the compass card. A course such as NNE.—called North-North-East—which lies two points to the east of North is called a "two-point course," while WNW. is a six-point course because it lies six points to the west of North. The number of points in southerly courses is determined by their distance from South in points. Thus SE¼S is a three-and-one-half point course because it lies three-and-one-half points to the East of South, similarly E¾S is a seven-and-one-quarter point course. This matter should be well mastered, it is not enough to be able to figure it out, the navigator should know how many points there are in any course, and if this knowledge is coupled with ability to "visualize" the card, so much the better.

Data for the First Traverse

Left a point ½ mile N.E. of "The Graves" and ran the following courses and distances, the compass errors being as given and the distances being given in nautical miles: Compass course N. by E.½E., deviation ½ point W., distance 1 mile; compass course N.E.½E., no deviation, distance 7 miles; compass course E. N. E.¼E., deviation ¼ point E., distance 5 miles. No current and 14°W. variation on all courses.

It was decided to work this traverse by plotting the "magnetic" courses with the aid of the inner compass rose. The data as arranged in tabular form for plotting is given below.

Compass Course.	Deviation.	Magnetic Course.	Distance.
N.byE.½E.	½ point W.	N. by E.	1 mile
N.E.½E.	none	N.E.½E.	7 miles
E.N.E.¼E.	¼ point E.	E.N.E.½E.	5 miles

Data for the Second Traverse

Left a point ¼ mile south east of Boston Light Vessel and ran the following courses and distances. Distances are in nautical miles and the compass errors as given. Compass course 10°, variation 14°W., deviation 4°W., distance 5 miles; compass course 44°, variation 14°W., deviation 1°W., distance 4 miles; compass course 103°, variation 14°W., deviation 1°E., distance 3½ miles. A current ran ½ mile in direction 210° while the vessel was under way.

Data as arranged for plotting:

Compass Course.	Variation.	Deviation.	Compass Error.	True Course.	Distance.
10°	14°W.	4°W.	18°W.	352°	5 miles
44°	14°W.	1°W.	15°W.	29°	4 miles
103°	14°W.	1°E.	13°W.	90°	3½ miles
	Allowance for Current.....			210°	½ mile

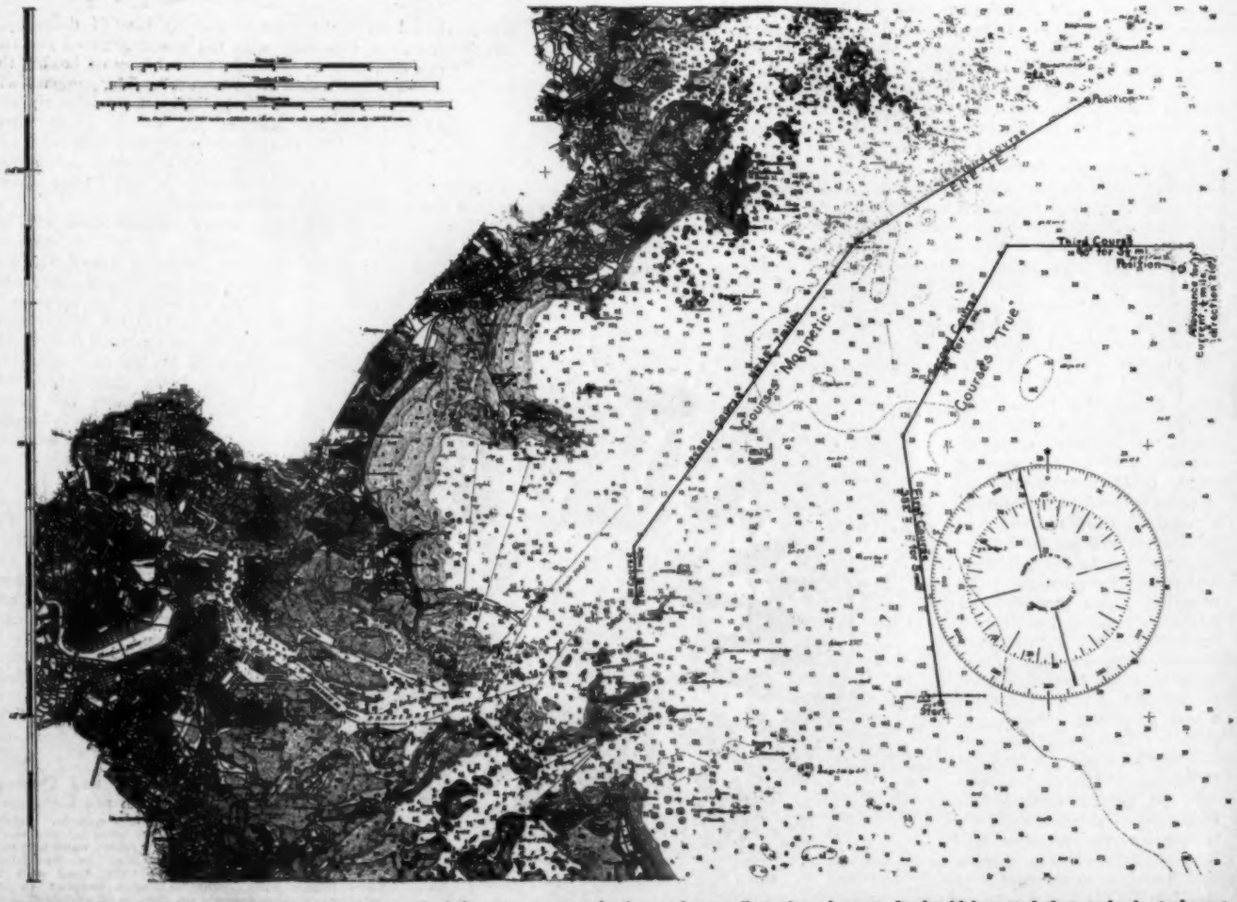
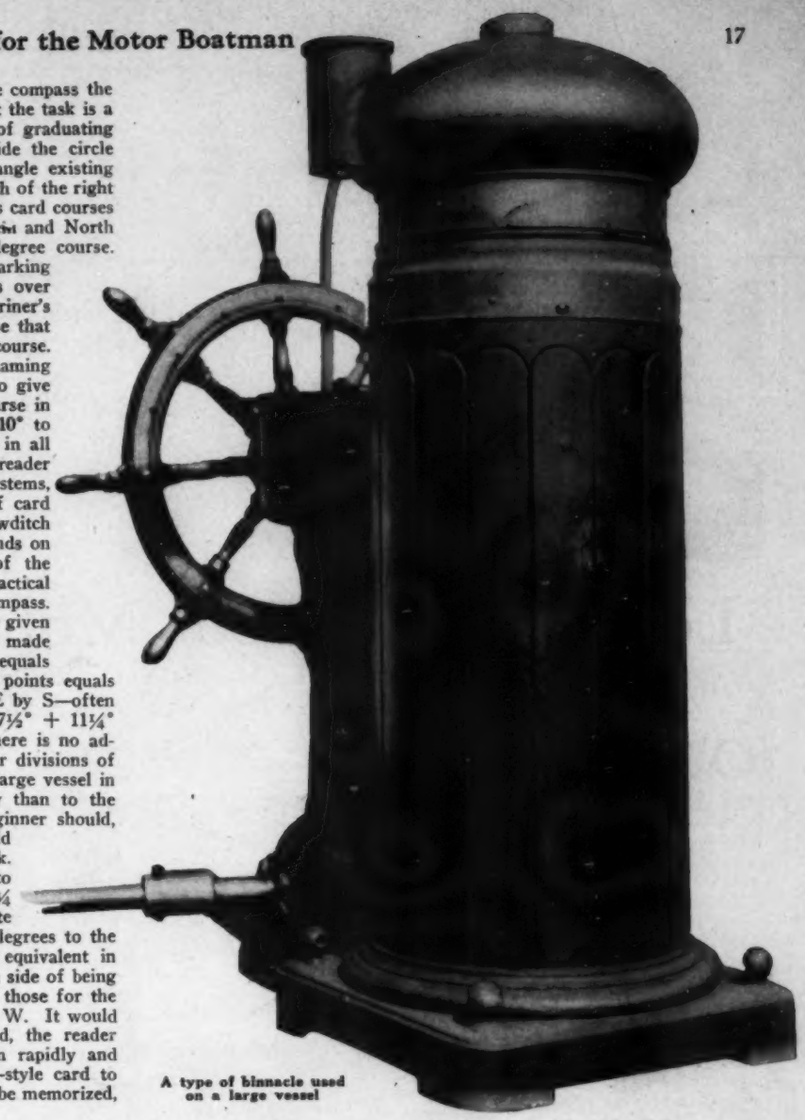


Fig. 5. Part of a large scale "polyconic projection" of the entrance to a harbor and a small section of coast. It should be noted that such charts have a scale of miles on them and each compass rose consists of two parts; an outer set of graduation in degrees which indicate "true" directions, and an inner rose graduated in mariner's points which is "magnetic." Two very simple problems in dead reckoning are solved graphically on this chart.

Having mastered the mariner's thirty-two points of the compass the degrees should next be tackled in much the same way, but the task is a far simpler one. Unfortunately there are two methods of graduating compass cards in degrees, both of which naturally divide the circle into 360 equal parts. In the old style card the right angle existing between North and East is divided into 90 degrees and each of the right angles between the cardinals are similarly treated. On this card courses are named by the number of degrees that lie between them and North or South, and no course is ever more than a ninety-degree course. The card is illustrated in Figure 1. This method of marking the card and naming courses has two great advantages over other methods; it is easy to convert courses in Mariner's Points to degrees and it is even easier to find the course that will carry a ship in the opposite direction to any given course. The more modern card is illustrated in Figure 3. In naming a course on this card in degrees it is merely necessary to give the number of degrees lying between North and the course in question in a clockwise direction. Thus a course lying 10° to the West of North is called simply 350°. Taking it all in all this is probably the best way to graduate the card. The reader will, however, have to familiarize himself with both systems, and he should be particularly familiar with the kind of card he has on his own compass. A table on page 16 of Bowditch gives the equivalent course in degrees, minutes, and seconds on the new-style compass card for each quarter point of the mariner's graduations. A similar table is given in Practical Motor Boat Handling for each eighth point of the compass. It is quite a simple mental calculation to convert a course given in points to degrees of the old-style graduation. If it is made a matter of memory that 1 point equals 11¼°, 2 points equals 22½°, 3 points equals 33¾°, 4 points equals 45°, and 6 points equals 67½°, the whole points can be readily handled. Thus E by S—often written ExS—is a seven-point course, it therefore lies 67½° + 11¼° = 78¾° from south and will be called S 79° E, for there is no advantage to be gained by working compass courses to finer divisions of arc than the degree. The reason for this is that even a large vessel in good weather cannot be held to a course more closely than to the nearest degree, so greater precision is wasted. The beginner should, however, not allow himself to grow careless and should get the *nearest* equivalent whole degree in doing this work. Now to handle quarter points in similar fashion one has to remember that ¼ point = 3°—, ½ point = 5½°+, and ¾ point = 8½°—; these values are, of course, approximate but they enable quarter-point courses to be changed to degrees to the nearest degree very readily. The sign following each equivalent in degrees shows whether the approximate value errs on the side of being too large or too small. The values are used just as are those for the whole points: thus WSW¾W. = 67½° + 8½° = S 76° W. It would be useless to print more problems of this simple kind, the reader should set himself many such and learn to work them rapidly and accurately. To convert a course in degrees on the new one follow this rule which should not be memorized,

(*Continued on page* 50)



A type of binnacle used on a large vessel

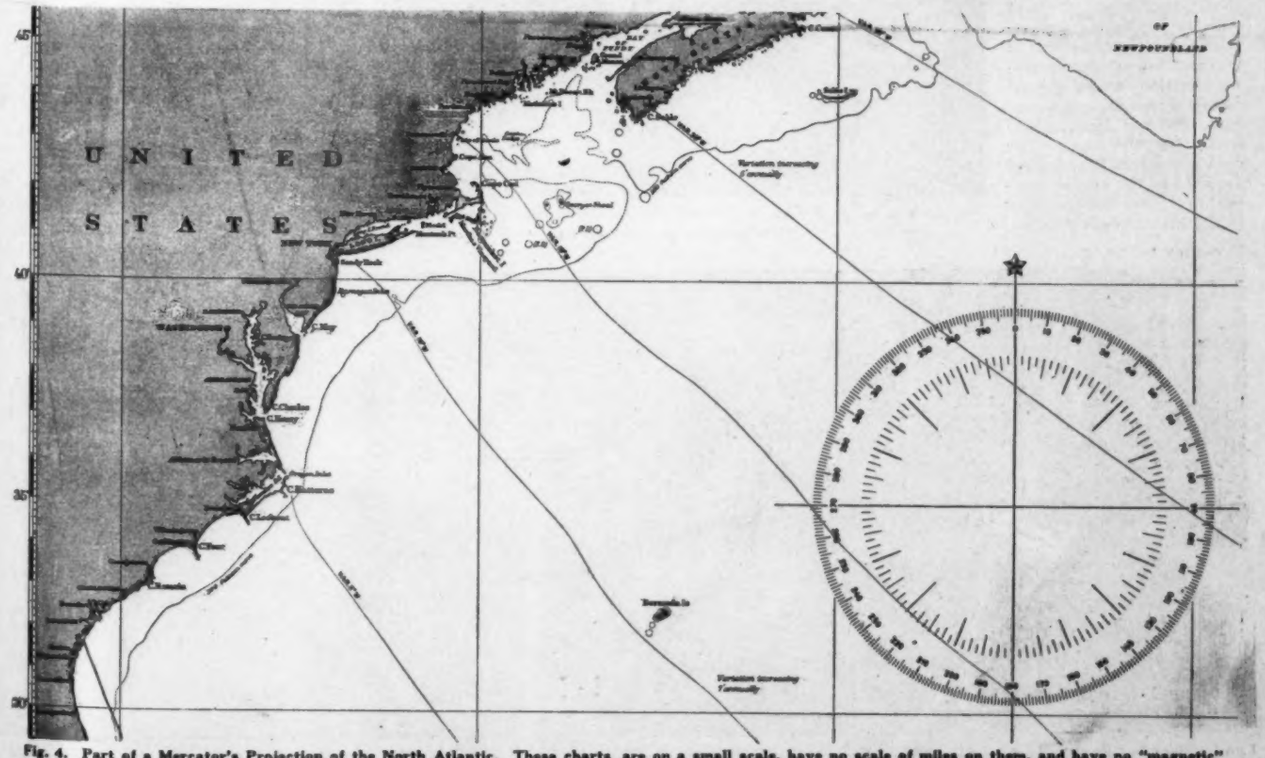
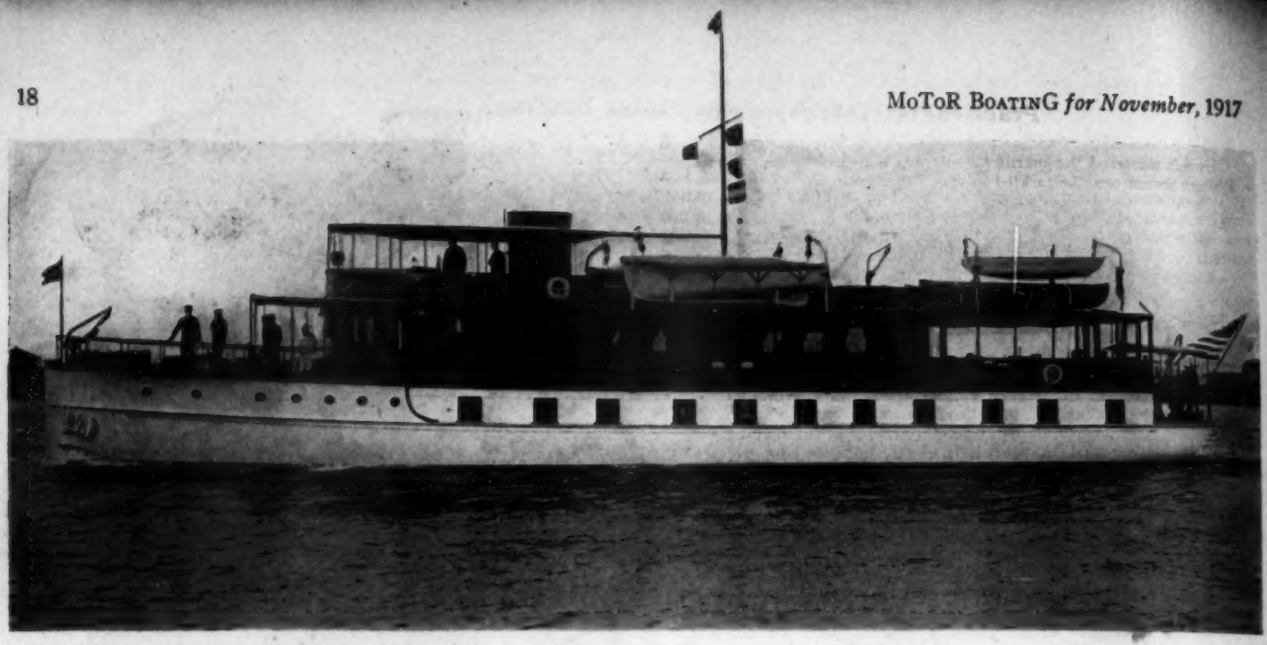


Fig. 4. Part of a Mercator's Projection of the North Atlantic. These charts are on a small scale, have no scale of miles on them, and have no "magnetic" compass roses. The variation in different localities is shown by means of dotted lines which pass through points where the variation is the same, much as contour lines pass through points of equal elevation in a "geological survey" map of the land



Leonie, a 106-Foot Motor House Yacht

A Craft Recently Completed by the Mathis Yacht Building Co. for Murray Guggenheim of New York City—A Draft of Less Than Four Feet Makes Southern Cruising a Pleasure

OF the many new craft recently launched, one of the most attractive was the motor yacht Leonie built for Murray Guggenheim, of New York City. Her owner is now using his new boat around the waters of the Great Lakes and Rieden Canal. The principal dimensions of Leonie are as follows: 106 feet length over all; extreme beam, 20 feet, and a draft of 3 feet 11 inches.

Leonie is powered with two six-cylinder 150 h.p. air-starting and reversing Standard engines which drive her at a speed of 13 m.p.h. The engine-room located amidships is fitted with an ice-making and refrigerating plant, as well as a generating set for supplying electricity to the electric stove, warming ovens and fans, and for lighting and heating the boat. The crew's quarters are situated forward of the engine compartment and are outfitted in the best modern practice.

This attractive 106-footer has an extremely large deck-house finished inside and out in teak. A combination smoking room and pilot house are located forward. Next comes the pantry finished entirely in white enamel, furnished with a porcelain ice-box, warming ovens, and everything of the latest style and equipment.

The deck is covered with light wood construction, with portable screens instead of awnings. This arrangement provides complete shelter from a storm

Photograph by Jas. Pearce.

The owner's quarters aft, have four double staterooms fitted complete in every detail of furnishing and decoration. Each stateroom has a private bath and toilet room adjoining. The bathrooms are finished in tints suitable to the decorations.

Aft of the pilot house is located the dining saloon, having large observation windows and double doors opening into the living room located next aft. Access to the after deck from the living room is by means of double doors. The deck which is unusually large and roomy is covered with light wood construction having portable screens on the sides instead of awnings

Leonie is so arranged that free access is had to all quarters, and full headroom is allowed throughout

The owner's quarters provide four double staterooms, each having a private bath adjoining

The above view gives an idea of the tasteful manner in which Leonie's living quarters are fitted out. The picture below depicts the white enameled bathroom

The dining-room with observation windows is finished in enamel with mahogany furniture. Double doors open into the living room located aft

mahogany, varnished. The general interior scheme is simple paneling painted white. The decorations of this boat were designed and furnished by L. Alavoine & Co., of New York City.

Being properly designed and strongly built by the Mathis Yacht Building Co., of Camden, N. J., Leonie is a good seaboat, especially free from deep rolling and jerkiness in a seaway. She steers very easily in a following sea and has been taken out in real storms with perfect safety.

A boat of this type is excellent for all-year-round cruising, and especially for that kind of cruise which two owner's launches, one 20 feet long and the other 18 feet long, together with four St. Lawrence skiffs.

for completely enclosing the cockpit in stormy weather.

Leonie has a complete outfit of auxiliaries, including large dynamos, ample storage battery capacity, electric windlass, compressors, bilge and fire pumps, etc. The small boat equipment is also large, there being

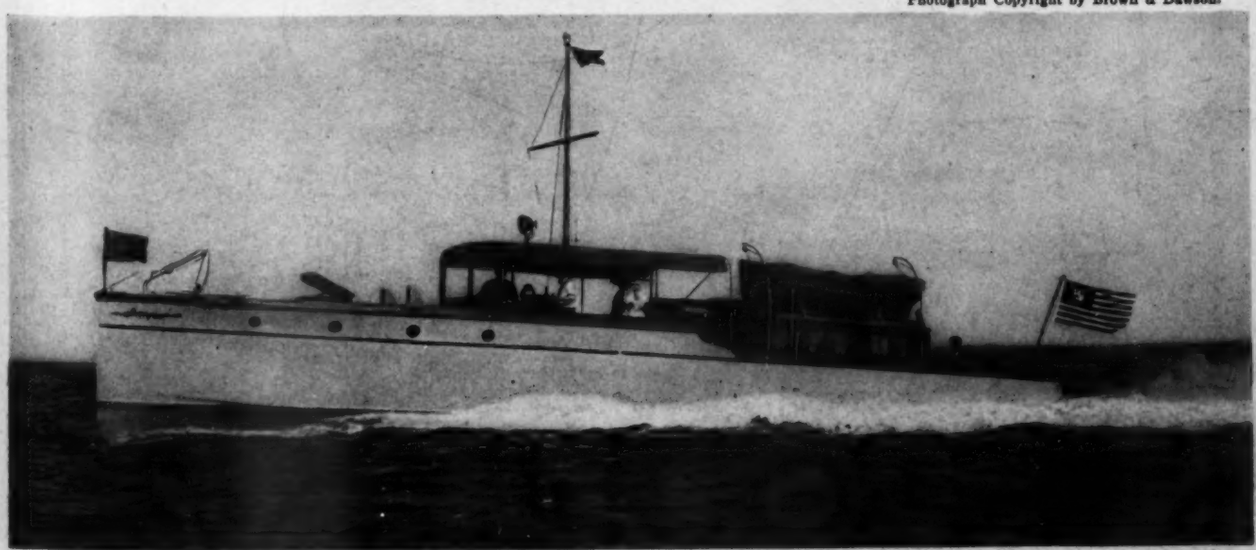
The houses on the main deck are painted white, while those on the upper deck are of

embraces from first to last the wide range of temperature between North and South in late fall. Comfort in the cooler parallels is obtained from the heating system installed.

Janice—A Bridge-Deck Cruiser

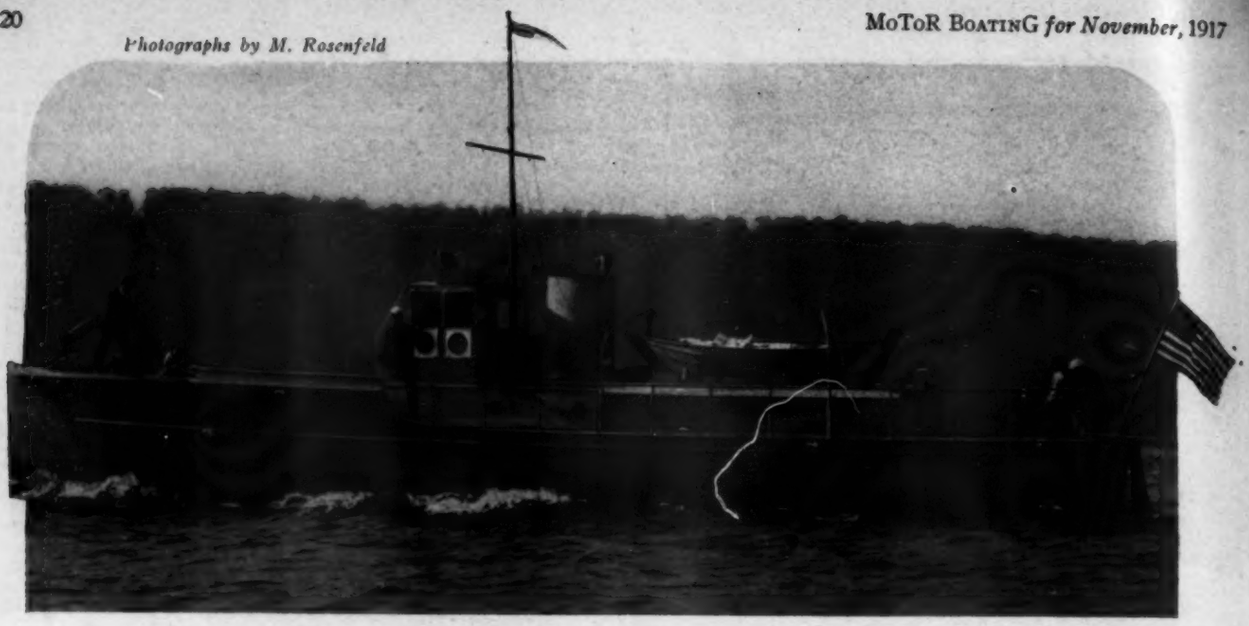
A 52-Footer With Large Accommodations and Moderate Draft—Powered with Two 215 H.P. Van Blerck Motors She Attains a Speed of 28 M.P.H.—Plain in Finish But Serviceable

Photograph Copyright by Brown & Dawson.



Janice was designed and built by the Luders Marine Cons. Co., of Stamford, Conn., for Wilson P. Foss. She is 52 feet long with an 11-foot beam and a draft of 3 feet

Photographs by M. Rosenfeld



A Sixty-Foot Stock Cruiser

The Biggest and Fastest Cruiser of Standardized Design Ever Brought Out in Considerable Numbers—A Boat With a Speed of 25 M.P.H. and Accommodations for a Large Party

WHILE still in the height of its popularity, the Speedway 52-foot express cruiser, has in the addition of the 60-foot model, a worthy successor which bids fair to exceed the record set by its smaller counterpart. Eight 52-foot, one-design boats were built this year, and five of that number are in active scout patrol service. This, the biggest stock cruiser and fastest ever conceived by any boat-building company, probably never had a parallel.

The accompanying illustrations convey a good idea of Acoma, the first 60-footer to be launched. In design it is nearly exactly like the 52-footer, the boat lines being very similar and the beam remaining unchanged. The construction follows the usual Speedway practice and is slightly heavier than is necessary for a boat of its kind. A steel conning tower, with its floor 9 inches above the main deck, is located directly aft of the space provided for the one-pounder, with large ammunition locker directly below. This section of the boat is especially strong, being well braced with steel angles and yellow pine pads.

The interior arrangement is not unlike the smaller boat. In the forecastle comfortable accommodations for four men are provided. A separate enclosed lavatory and sufficient locker space make this compartment very complete.

Two eight-cylinder, Model M, 5¼ x 7-inch Speedway motors are installed in the spacious engine-room located amidships. Aft of the motor room a large galley is arranged on the starboard side, opposite which is a lavatory. The main cabin has deep upholstered spring berths, which provide sleeping accommodations for a crew of four. Two pipe berths are provided in the engine-room.

With her efficient power plant Acoma is capable of a speed of 25 m.p.h. The gasoline capacity is 500 gallons, assuring a good cruising radius. The boat has recently been assigned S. P., 1228, as her owner, T. D. Partridge, has offered her for patrol service.

Acoma was designed and built by the Gas Engine & Power Co., and Chas. L. Seabury & Co., Cons., of Morris Heights, N. Y. The hull is of heavy construction and the outside of the cabin is of mahogany. The boat is steered and controlled from the bridge deck.

The two Model M eight-cylinder Speedway motors

A view of one of the cabins showing one of the upper berths in place

The wheel-house, showing engine telegraphs, chart case, binnacle, etc.

The Liberty Motor of the Sea

A New Twelve-Cylinder V-Type Engine of Four Hundred Horsepower—All Working Parts Enclosed and Accessibility a Unique Feature

Photographs by M. Rosenfeld

At a speed of 40 m.p.h. Neowam was steady and the motors so free from vibration that the boat had more the motion of a sailing craft

Just an idea as to how a 40-mile cruiser looks coming head-on

THE popularity of the express cruiser and the possibilities of this field for the development of the high-powered motor has been emphasized again. This time the performance of two twin-six motors in a 53-foot hull has startled the world and incidentally demonstrated that a marine motor has been perfected which bids fair to rank with the new famous Liberty aeroplane motor for war purposes.

The two Cottrell-Holmes twelve-cylinder motors which develop 400 h.p. each

C. D. Holmes (on the left), the designer of the motor and his crew aboard Neowam

C. D. Holmes, long connected with the marine field, and inventor of the Holmes motors, which have been so widely used in Government work in the past, is alone responsible for the new invention and the production of this wonderful machine whose usefulness can hardly be estimated in times like these. For nearly two years the inventor has been quietly working, unknown to the world, perfecting each minutest part, and for a year the assembled product has been in operation and in the process of testing. Not until the gigantic machine was perfect did the inventor announce to the world what he had accomplished.

In operation the motor is remarkably quiet, absolutely without vibration, all exposed parts

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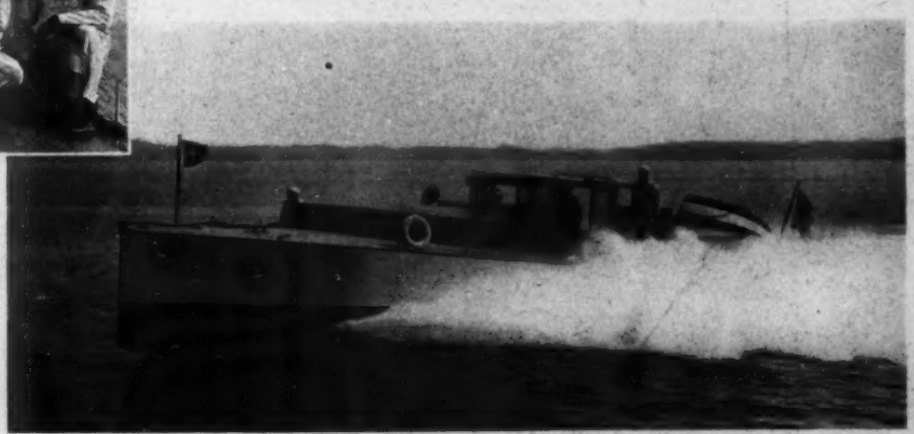


The mass of spray and foam as the boat comes up to speed

A Standardized Express Cruiser

A Forty-Foot Design Produced to Meet the Requirements of Both Northern and Southern Use Comfortable Cruising Accommodations for Those Who Wish to Make Week-End Trips

NOTLIH, a duplicate of Joanna, exhibited at the 1917 New York Motor Boat show, is one of the standardized 40-foot express cruisers specialized on by the Albany Boat Corporation. This attractive 40-footer having a beam of 8 feet 6 inches and a draft of 3 feet, provides comfortable accommodations for week end trips as well as for extended cruising. She was designed and built by the Albany Boat Corp., of Watervliet, N. Y., for Mrs. George P. Hilton, of Saugerties.

Powered with a six-cylinder Model F Sterling motor having a bore and stroke of 5½ x 6¼ inches and turning a 22 x 28-inch Columbian Architect propeller, she attains a comfortable cruising speed of 23 m.p.h.

The outstanding feature in the construction of this craft is her large, roomy, and well-ventilated engine-room completely equipped with an electric starting and lighting apparatus and a toilet room located on the port side. In designing their standardized cruisers, it is the definite policy of the Albany Boat Corporation to build the engine compartment so that the power plant may efficiently perform the work assigned to it, as well as to permit easy access to all parts of the motor when the need arises. The importance of properly designing and building the engine-compartment in boats of this type cannot be over-emphasized.

The motor compartment is separated from the owner's quarters by a water-tight bulkhead and is provided with a flight of steps leading to the deck. The stateroom opens aft into the galley which is completely fitted in every detail. Next aft and communicating with the galley is the main cabin with a folding table and two wide berths. The guests' stateroom is located next aft of the cabin which is finished in mahogany and is upholstered in leather.

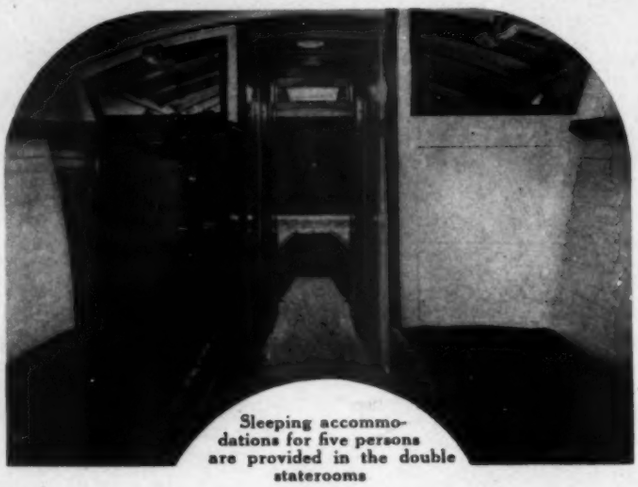
The construction of this 40-footer is especially strong and the hull was designed to provide ventilation in each compartment. The interior finish is mahogany and every inch of space available has been used to advantage.

Notlih has proven to be an exceptionally successful day cruiser and has ample speed for every requirement.

The large amount of deck space furnished with wicker chairs and a built-in seat affords comfortable accommodations. Protection from the elements is provided by means of an awning covering the entire cockpit.

All controls are brought to the bridge deck for one-man operation.

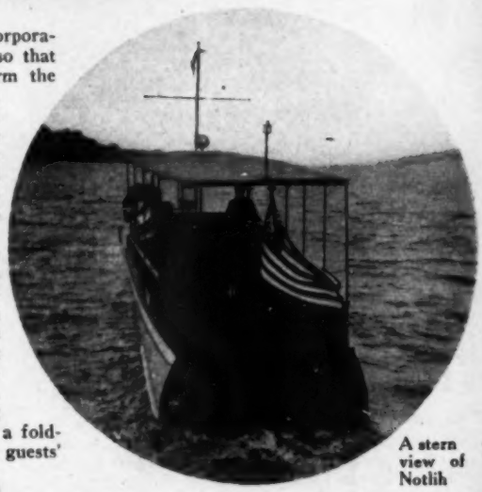
Notlih is one of the most complete and up-to-date craft of this season's vintage.



Sleeping accommodations for five persons are provided in the double staterooms

Photographs by Edwin Levick

The six-cylinder Model F Sterling



A stern view of Notlih

Notlih was designed and built by the Albany Boat Corp., of Watervliet, N. Y., for Mrs. George P. Hilton, of Saugerties. The entire cockpit is covered with an awning which provides protection from the elements. A speed of 23 m.p.h is attained

PRIZE CONTEST IN QUESTIONS AND ANSWERS

As Others See The Prize Contest

The Opinions of Several Motor Boatmen as to the Value of the Prize Contest Department in MoToR BoatinG—Many Praise the Contents of MoToR BoatinG Generally

THE PRIZE CONTEST—Answers to the First Question in the September Issue.

The Opinion of Many, We Hope

(The Prize-Winning Answer)

ON one occasion I had a strong desire to address you and express my opinion of your prize contest, the occasion being when I received space rates instead of first prize for my article in answer to the question pertaining to the proper way to line up an engine bed. But, when the time came to install *my* engine bed, I had to admit that the first prize candidate had it on me. You will infer from this that I have built my own boat. I have. And with plans for a cruiser hull designed by Wm. H. Hand together with the knowledge gained from studying your prize contests, I have produced a boat that any one would be proud to own. You may not realize it, but the expert advice made public in your prize contests, originating as it does, in the brains of men who know from practical experience whereof they speak, is not only a very much appreciated and valuable source of information to the amateur boat builder, but a pleasurable bit of reading to all lovers of the boating game.

I have climbed into the cockpit to lend a pal a hand and found him installing a new lighting outfit with the aid of your prize contest sheet tacked to the bulkhead. Conversation finally led to repairs, etc., and, wishing to repaint my craft he advised me to consult a fellow boatman in our club (who, by the way enjoys the reputation of having unusual wisdom in everything boaty) to find out the exact amount of paint necessary to purchase to cover my boat. The wise one pulled out a loose-leaf book from a drawer in the pilot house, and there was the source of his knowledge—Prize Contest Sheets.

These are local incidents, which, it is safe to say, are duplicated wherever your magazines circulate and motor boats float, and emphasizes the high opinion and value placed upon the nautical and mechanical subjects submitted, judged, and printed for the benefit of your readers.

M. A. C., Bremerton, Wash.

* * *

An Ex-Windjammer's Opinion

TO improve perfection is obviously impossible. I cannot conceive of any suggestion which could make your Prize Contest Department any more interesting or useful than it is at present. Its chief value is in the well-balancing of the three questions appearing each month, as, roughly speaking, one deals with the hull or some component part, another with the engine or electrical fittings, and the third with some cabin equipment. In each issue, you cover the three main parts of the ship and at least two-thirds of your questions and answers are as useful to the windjammer as to the motor boat sailor.

The contest will stand or fall in the future, depending on the suggestion and selection of questions. In their selection, the editor has shown an ability in the past which admits of no possibility of failure in the future, but can the quality of the suggestions be kept up? I have been wondering about this for months, and frankly, in each issue have feared and expected to see a falling off in quality which would foreshadow the end. But no such thing has happened. To me, at least, the questions are improving and with your many interested admirers, which I know are constantly increasing, I hope we can keep it up till the end of time. I say we because having been so lucky as to suggest a question and answer another, I feel a personal interest in keeping alive so good a proposition.

The sole suggestion I have to offer, prompted no doubt by my bump of curiosity, is that the articles selected as prizes be published. Not necessarily with the prize-winning question or answer, but at some convenient time. It would suggest to the readers some things they need and could get with a little pleasant thought and effort. Would it not stimulate interest to have a second and possibly a third prize to each answer reducing, if necessary, the amount of the first prize? I believe it would encourage more men to try, and it is human nature to stick to a thing at which you are successful or receiving encouragement.

As to the usefulness of the Contest, there is no question. The man who reads the answers can't help but find the best solutions of many bothersome things and the man who suggests or answers questions, whether successful or not, is acquiring practice, knowledge and ability to express himself and use his brain. When I first saw MoToR BoatinG, I was a windjammer pure and simple with no use for the power boats, but the Prize Contest Department fascinated me, and I subscribed immediately, solely to read that section of the magazine. Even now, when I work on a cranky carbureter or sticking valve, instead of cussing the calm or sweating up the halyard, I always skip your expensive many-colored art cover, skip your flying, spray-throwing hydro and express cruiser pictures and dig amidship for your Prize Contest.

No, it can't be improved and its value with my poor ability can't be expressed in either words or figures.

H. A. J., New York City.

* * *

Suggests an Index

THE Prize Contest Department in Questions and Answers of MoToR BoatinG is an asset of increasing value to those who preserve the old copies of the magazine. Those phases of boat construction, upkeep and operation which have been covered in past issues are set forth much more thoroughly than in any treatise on motor boats which I have ever seen.

The fact that these answers are written by both fresh water men and salts, and by the owners of widely different types of boats renders them serviceable to a far greater number of readers than any material which one writer is able to prepare.

With constant changes in the trend of hull and power plant design and equipment, our problems change from season to season and those who contribute to or follow the Questions and Answers Department will frequently open a copy of MoToR BoatinG to find, asked or answered, the very question over which they have been pondering.

As my copies of MoToR BoatinG have grown to a considerable height, and I refer to the questions and answers frequently, I have eliminated a decidedly irksome, though seldom fruitless, job of finding an answer which I want by card indexing the questions, which number over one hundred in the copies which I possess.

This, however, does not save the sadly dilapidated older copies from use, as I frequently haul them out on a winter's evening and read what I didn't read before, it's all interesting.

Therefore, I should suggest as a means, not for improving the material nor its editing, but in order to make it more permanent, that the Editor of MoToR BoatinG issue a complete review of all answers hitherto published, these to be printed on cards or heavy paper of a size to fit a catalogue file and sold not bound together but loose in a port-folio. Additions or substitutions of subsequent answers in the same form could be easily made and such material would be invaluable to the many persons who do not preserve periodicals or for stowing away conveniently while cruising.

R. W. H., Springfield, Mass.

Questions for the January Issue

1. Give your ideas as to the relative enjoyments of motor boating and automobiling, and why you prefer one sport to the other.
Suggested by Z. R. L., Columbus, O.

2. How can an amateur determine the correct position of the waterline on a cruiser?
Suggested by L. S. L., Los Angeles, Cal.

3. Describe with the help of sketches, a clutch control that may be located close against bulkhead and within easy reach of steering wheel. Lever to be hinged so as to permit dropping down against column.
Suggested by F. T. L., New York City.

Rules for the Contest

Answers to the questions, addressed to the Editor of MoToR BoatinG, 119 West 40th St., New York, must be (*a*) in our hands on or before **November 20,** (*b*) about 500 words long, (*c*) written on one side of the paper only, (*d*) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired.) Questions for the next contest should reach us on or before the **20th of November.** The Editor reserves the right to make such changes and corrections in the accepted answers as he may deem necessary.

The prizes are: For each of the best *answers* to the questions above, *any article or articles* sold by an advertiser advertising in the *current issue* of MoToR BoatinG of which the advertised price does not exceed $25, or a credit of $25 *on an article* which sells for more than that amount. (*There are three prizes—one for each question—and a contestant need send in an answer to but one if he does not care to answer all three.*)

For answers which we print that do not win a prize we pay space rates.

For each of the questions selected for use in the next contest, *any article or articles* sold by an advertiser advertising in *this issue* of MoToR BoatinG, of which the advertised price does not exceed $5, or a credit of $5 *on an article* which sells for more than that amount.

All details connected with the ordering of the prizes selected by the winners must be handled by us.

PRIZE CONTEST

A Motor Boat Encyclopedia

EACH month the Prize Contest Department contains one or more items of interest to the practical yachtsman, but only when one pulls out his back numbers of MoToR BoatinG, does the real value of this feature become apparent. On looking through several issues that have been accumulating for five years or more, I find that they comprise a veritable encyclopedia from the pens of hundreds of boatmen who knew what they were talking about, for their articles embody the knowledge gained from that best of teachers—Experience.

It is a common saying that every man has in him the makings of a worth-while book, if he could but give it literary form, and probably it is no less true that every man's brain harbors an invention of more or less value, even though it be but a kink to lighten the day's work. In the motor boat bug, intensely interested in his hobby, his brain cleared by fresh air and a complete change from his customary pursuits, this inventive faculty is given free rein in ingenious attempts to solve the many problems which crop out from time to time as regards improvements, for the true motor boatman is never satisfied with his ship, and his experiments extend into the field of the carpenter, the machinist, the electrician, the painter, the plumber—in fact he must be a Jack of all trades.

Here the Prize Contest Department steps in. Puzzled boatmen submit their problems; the editor sifts out such as are of common interest and turns them over to the readers of MoToR BoatinG for solution, and in two months' time we have, through the joint intelligence of the subscribers, again sifted by the editor, a presentation of several practicable ways of achieving the desired result—and generally they are as inexpensive as they are satisfactory.

In this, then, lies the great value of the Contest Department—that, with liberal prizes as an incentive, it makes available to each subscriber the fruit of the collective experience and ingenuity of all.

As a feature, it is unique among the periodicals devoted to the interests of motor boatmen. It furnishes practical answers to practical questions. What more can be desired?

C. H. S., Phila., Pa.

* * *

Motor Boating is the Best of Them All

THE value of the Prize Contest Department of MoToR BoatinG is unsurpassed. There can be no question as to that. The varied thought and experience of many men in a certain line is always of value.

I read constantly six magazines in the boating and shipping field and a large number of engineering periodicals and in consequence have noted many versions of the question and answer style of departments.

Nearly all of the publications along the lines mentioned have a department of this nature under one of the following classifications: questions asked by readers and answered by one or more staff writers; questions asked and answered by the readers without any recompense for either question or answer, and the department found in MoToR BoatinG, where the readers give both question and answer and are paid for any that are published.

The points I particularly approve of in the MoToR BoatinG's Prize Contest Department are: First, that the questions are published two months in advance of the answers so as to give ample time for the proper preparation of the answers; secondly, that the answers given in an issue of the magazine are limited so that each question asked can be fully described and not dismissed in a few lines, leaving the reader in about the same condition as before only perhaps more mystified on some one point.

It is a grave fault of some of the departments that they try to crowd too much into a single issue, the result being that proper treatment of a subject is impossible in the space allowed.

A good point in MoToR BoatinG's Department is that we can read a question and know just when to look for the published answer.

This tends to sustain interest in the department and we can plan to look it up, see if we agree with it, and can use it.

The answers coming in from the readers lends tremendous field of actual experience to draw from, the experience of men from quiet lakes and stormy seas, from little skiffs to ocean-going cruisers and the wild racers of the cup series.

As an engineer of many years' standing I favor getting the opinions and experience of many and making my own selections over taking the personal views of one man.

I honestly believe the present system followed in the department the best I know of. The feature of paying for the best questions and answers is proper, there is work and thought in them and it gives an incentive to be among the best with our answers.

As to improvement in the department that is mostly in the hands of the readers. Let all who have seen some point that needs a ray of light speak up, and when they have, you fellows who know so much about it come on with the answers for the benefit of those who know less along that line. If you are so big a man that the financial reward and the pleasure of your work in print mean nothing to you, forget that and answer just for the love of the game, the cleanest and healthiest sport of the country. If you think you are not a smooth writer, forget that, ideas and experience are the things that count, not specimens of literary workmanship.

For myself I keep and file the questions and answers appearing each month, having large filing envelopes for this purpose and classify the matter under their respective headings.

G. R. L., Boston, Mass.

A Table for the Open Boat

Practical Schemes for Building a Combination Folding Table and Mess Chest for Use in the Open Boat When Cruising—Full Plans and Descriptions for Doing the Construction

THE PRIZE CONTEST—Answers to the Second Question in the September Issue.

Of Various Uses

(The Prize-Winning Answer)

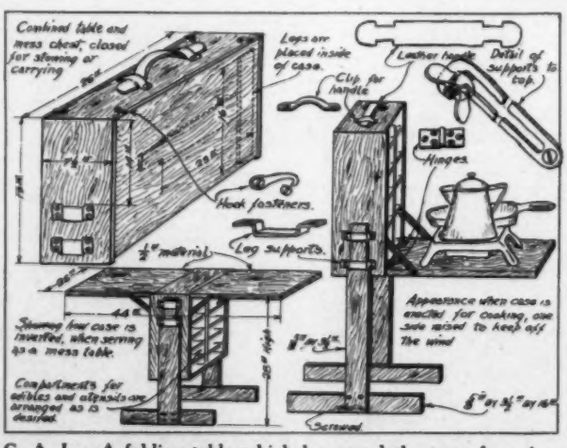
THE illustrated portable galley and mess table is designed along the lines of one that we have used during the last two seasons, but differs in size, methods of fastening the legs and the hinged sides. This case has the advantage of compactness, for stowing readily into side lockers, and is readily carried by means of the handle at the top, the idea being to have it conveniently packed with provisions from the pantry stock and carried to the boat in readiness for an immediate start.

In size, the dimensions, as suggested in the sketch, are about the same as a suitcase, these, however, can be varied to obtain a table of any required size.

The main frame of ⅝-inch material, oak preferred, should be securely fastened together. Dovetailing makes the strongest frame, but if lapped and nailed, the corners can be reenforced with brass strips.

The sides are of ½-inch pine or oak, which can either be reenforced with battens to prevent warping, or made up of two thicknesses of ¼-inch wood, glued together with the grain of one piece crossing that of the other.

The legs should be made to fit snugly into the side fastener pieces, to keep the table top rigid, while the foot or floor pieces should be screwed solidly to the uprights.


Combined table and mess chest, closed for stowing or carrying
Legs are placed inside of case.
Leather handle
Detail of supports to top
Clip for handle
Hinges
Hook fasteners
½" material
Leg supports
Appearance when case is erected for cooking, one side raised to keep off the wind
Screwed

G. A. L.—A folding table which has stood the test of service. Dovetailing makes a strong frame

The fittings for the handle, the hooks and leg support clips can be purchased from any hardware dealer, but the top support guides will possibly have to be made. Use at least a 3/16-inch strip of metal 1¼ inches wide and place the offset at the end of the slot to prevent the lid from closing even though the wing-nut fasteners are not screwed tight.

The center part of the chest, divided into several compartments, can be varied to suit the needs of the user, by providing to suit the number of plates, cups, knives, forks, etc., to be used, and fitting tin containers for the flour, sugar, coffee, bread, salt, spice, etc., and arranging compartments for the canned goods.

Cooking utensils will hardly find room in a small case and I believe it is a better plan to carry these in a locker with the kerosene stove.

In preparing the meal, one side of the chest is opened and the stove placed upon it, the up-raised side protecting the flame from the wind.

PRIZE CONTEST

When the case is mounted in this position, it will be lower than when it is inverted for table use and the low position helps to keep some of the draft away from the stove, but it will be necessary to place something at the sides to keep the wind off.

After the meal is prepared, the other side of the case is lowered and the frame part inverted.

The folding table then, in conjunction with the side locker seats, provides a comfortable and clean method of serving the meals.

It can, however, be used without turning the frame part down, but a roomier table space is provided by inverting it..

When finishing off the case, the inside if enameled with white looks clean and is easily kept so with soap and water, while the outside can be given a coat of wood stain and varnish.

This mess kit is not only suitable for boat purposes, but the writer has found that it is very convenient also for automobile outings, when it is carried on the running board and covered over with a water-proof cloth casing.

G. A. L., Washington, D. C.

* * *

A Folding Table

A MESS chest, which when closed occupies a space of 11 inches x 28 inches and when open gives a table surface of 26 inches x 33 inches and when at regulation height is 28 inches, can be made from the following details:

1 piece ⅞"x 11"x26¼" (Bottom)
1 piece ½"x 11"x26¼" (Back)
2 pieces ⅞"x 11"x11 " (Ends)
1 piece ½"x2½"x26¼" (Front)
1 piece ½"x1½"x26½" (Bottom front)
1 piece ½"x8¼"x25½" (Upper bottom)
2 pieces ½"x8¼"x 8¼" (Division panels)
3 pieces ⅞"x 11"x25 " (Table)
2 pieces 2½"x2½" (Binders)
2 pieces ½ gal. pipe 26" long threaded one end
4 pieces ½ gal. pipe 9" long threaded one end
2 pieces ½ T's pipe
8 ½ pipe clips (put ½ packing between them and wood)
4 ½" screw eyes
4 flat brass hooks, 2 inches long
1 piece ½" rope, 24" long
2 pieces 1/16x1x4 sheet brass (see detail at A)

The table is made in three parts so that when it is not in use it closes over the front, top and back of the chest and is secured by four screw eyes and hooks. To put the table into use all that is necessary is to place the T supports in position, put the binders on the edge of the table and snap over the T supports. The binder mortise ought to be snug and the brass clips have sufficient grip to prevent any lateral movement.

The chest will hold four 7-inch preserve jars for flour, tea, coffee, sugar, salt, cocoa, butter, etc., four cans of canned goods, eight bowls, or a dozen cups, eight plates, besides leaving two compartments 7½ x 8¼ x 8¼ inches for the stowage of other provisions.

As all the contents will not be out of the chest at the same time, they will serve to steady the table, which is not altogether necessary as the bearing comes on the 28-inch foot surface.

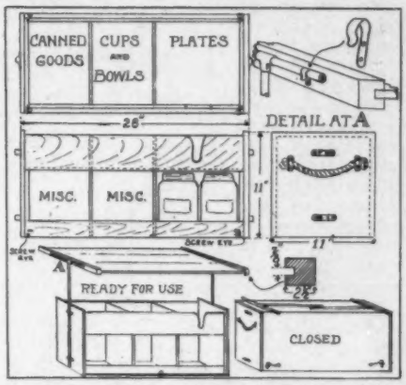
Material and finish can be varied to suit the individual taste, but oak, magohany or cypress will make the most serviceable chest and at the same time take a good finish. The interior can be given a natural finish or enameled.

If a more elaborate finish is wanted, the pipe supports can be made of brass tubing.

J. E. M., New London, Conn.

Very Compact

THE table consists of two main compartments subdivided into smaller ones and arranged to fold over each other so as to occupy as little room as is possible. The dimensions when folded are 18½x18½x2 feet, 7 inches. The table when in use is supported by four legs 1½x2x2 feet, 6 inches long, and made to slide into guides of 1x1/16-inch bar steel bent and bolted to the main compartments with 3/16-inch diameter bolts. Each leg has a 1x1x⅛-inch shelf angle bolted to it with ¼-inch diameter stove bolts to carry the weight of the table.



James E. Murphy—A combination folding table and mess chest which fulfills the requirements

The material entering into the construction may be of yellow pine or any wood that is easy to work. The bottom is fastened to the sides with No. 8 screws, 1½ inches long, flat or round-headed to save countersinking, and spaced about 4 inches apart. The sides will be fastened in the same way, and so on for the cover. The cover and bottom of each compartment has to be made in two pieces. These can be put together with glue and steel dowel pins driven half way into both sections.

All the hinges shall be bolted or riveted, the bolts being upset over the nuts after tightening. The strap hinges on the bottom must be fastened with C.S.K. head bolts or rivets, and a distance slightly thicker than the folded hinge has to be fastened to one compartment as a spacer. A hasp will be fastened to the ends of the covers to keep them closed when the table is folded or closed as shown in the drawing.

The divisions in the main compartment are ¼-inch material fastened to the bottom and sides with glue and screws. The strips between drinking glasses are 2 inches high, and at divisions marked sugar, coffee, salt, they are cut out to allow clearance for putting this in place; in all other cases they are ¼x6 inches high, except where marked 7¾ inches at dish-pan and bread compartments.

Linen tape ½-inch wide fastening through buckles is used over the plates and where shown to keep them in place, this tape should be securely caught on the bottom of the compartments with rivets; the tape should be made plenty long enough so as to make up for increase of volume in the compartment.

The cups (where marked) shall be kept in place by a 1x⅜-inch strip fastened to the side with a spring T hinge, the spring being heavy enough to exert pressure in them and keep them from moving.

Towels can be stowed away under the plates for which they will make a good packing. Provision has been made for six cups, six glasses, six plates and six saucers, but these two latter can be increased at will according to the length of tape used.

The material required is as follows:

No. Pcs.	Thickness	Width	Length
2	⅞"	7"	2'7" sides
2	⅞"	8"	2'7" sides
4	⅞"	7"	1'5⅛" sides
4	⅞"	9¼"	2'7" bottom
2	⅞"	9"	2'7" cover
2	⅞"	8¼"	2'7" cover
4	⅞"	1"	1'3½" cover
2	⅞"	1"	2'7" cover
2	⅞"	1½"	2'7" cover
4	1½"	2"	2'6" legs
2	½	2"	0'4" spacers

3 lineal feet ⅜x1" wood strips for divisions.

12 lineal feet ¼x6" wood strips for divisions.

1 lineal foot ¼x2" wood strips for divisions.

4 lineal feet ⅜x7¾" wood strips for divisions.

1 piece 3x1½x7" to be split and beveled for cup rack.

STEEL

No. Pcs.	Thickness	Width	Length
2	1/16"	1"	2'6"
4	1/16"	1"	1'5"
8	1/16"	1"	7½" bent
4	1x1x⅛ angles		2" shelves

HARDWARE

4—1x2½" lg. hinges

3—3" long strap hinges

4—hasps 1" wide abt. and keepers

5—spring T hinges abt. 1" wide

4—chest handles, collapsible abt. 4" long

14 feet of ½" linen tape

12 buckles for linen tape

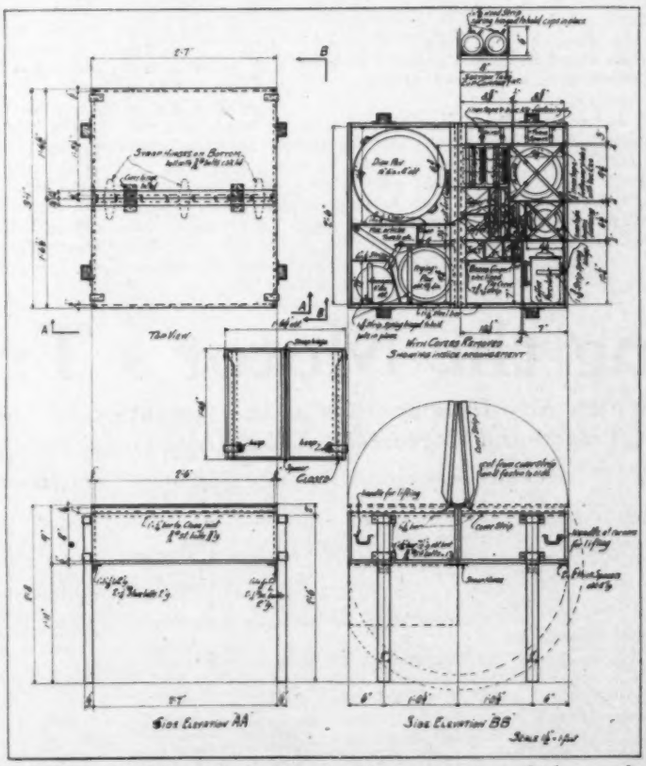
9 doz. screws 1½" No. 8, 6 doz. screws 1" No. 8

1 sheet zinc 8x11", 1 sheet zinc 8x36", 1 sheet tin 8x11". (Bread box lining and cover.)

8 doz. stove bolts 1" long 3/16" diam. C. S. K. hd.

1 doz. stove bolts 2" long ¼" diam. round hd.

E. B., Baltimore, Md.



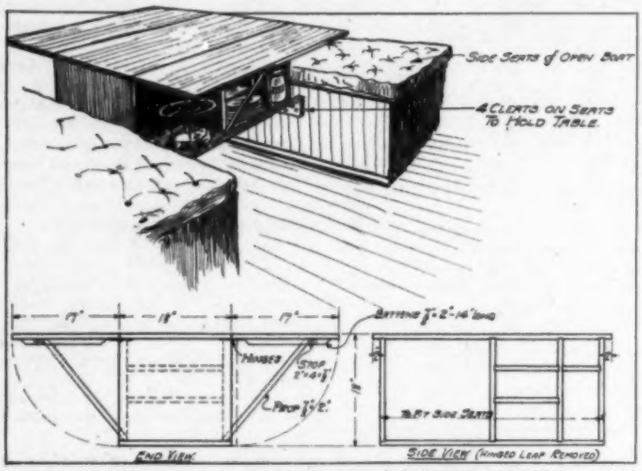
E. Balete—A folding table of serviceable construction which may be conveniently stowed away when not in use

PRIZE CONTEST

A Folding Table and Mess Chest

THE table and mess chest shown in the drawing is designed to fit, while being used, between the side seats of an open boat, resting on supports or cleats fastened to the front of the seats, thereby doing away with legs or other supports, which would have to be folded up.

As it will be seen, the chest, which is made throughout of ⅞-inch thick white pine (oak may be used if weight is no criterion) has two sides hinged so as to raise up and form a table-top 52 inches long. These sides, 17 inches wide, should have at least three battens ⅞ x 2 x 14 inches to prevent warping, and should be fastened to the body of the chest with three brass hinges. A small stop should be fastened to the under side of the table leaves as shown in the sketch so that a loose prop or strut ⅞ inch by 2 inches can be put in to hold the leaves in position. As this strut or prop is in the center it will not be in the way of any one's knees when sitting at the table. The bottom



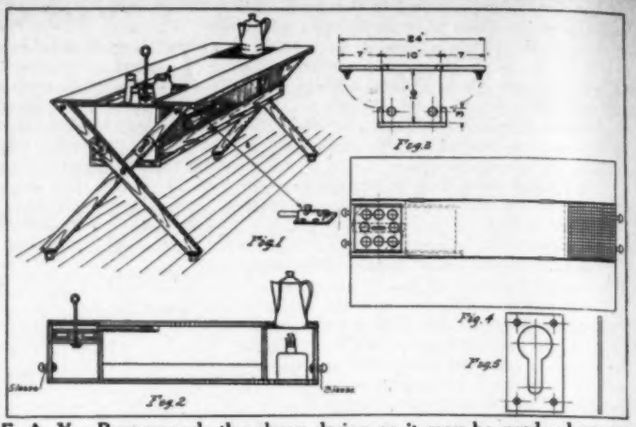
F. E. M.—A folding table and mess chest designed so that it may be placed between the side seats of a boat when in use

end of the prop is supported against the center partition of the chest. These props are not fastened and when the table is folded are stowed inside the chest, for which reason the partitions of the chest are set back about 1½ inches from the face of the chest, allowing a 1½ inch space between the sides when folded and the partitions.

The length of the chest must be made to suit the distance between the side seats, preferably at the widest part of the boat, and should be about ¼ inch shorter than the actual measurement between the seats. In locating the cleats or supports, which are fastened to the side seats, about 9 inches clearance should be allowed between the table leaves and the seats so that one's knees will have ample room when sitting at the table. But utilizing the side seats, four persons can sit at the table and in an extra wide boat two more may be accommodated between the side seats. The cleats on the side seats which support the table are merely L-shaped pieces of wood screwed in place as shown.

As to the inside of the chest, partitions may be arranged to suit the individual. The sketch shows a large space for the stove and smaller spaces or lockers for plates, cups, saucers, knives, forks and spoons. Canned goods and other non-perishable goods may also be kept in the chest. The chest will prove convenient when cooking in an open boat as it protects the stove from the wind. For this purpose the side leaves may be let partially down, but must not be closed altogether.

When the meal is over, the chest may be lifted out of the supports and stowed away in a more convenient place. No handles are necessary on the chest as the top projects 2 inches and affords a hold when moving the chest.—F. E. M., Philadelphia, Pa.



F. A. Y.—Recommends the above design as it may be used ashore as well as aboard

For Use Aboard or Ashore

THE drawings show a combination table and mess chest which possesses an advantage, in that it can be used on shore as meals are often served in this way when cruising.

At one end of the chest a small zinc compartment is provided with a screen cover. By making use of the so-called canned heat, which is now upon the market, coffee and tea may be prepared easily. It will be noted that several holes are provided in the bottom for air circulation.

At the opposite end of the chest is another compartment with a false bottom having recesses cut herein, in order to hold seasoning receptacles. The false bottom may be raised and lowered by means of a center rod. Attached to the rod is a metal strap which engages recesses in the sides of the compartment when the articles are drawn up and the rod is given a slight twist. This is plainly shown in the longitudinal section of Figure 2.

The dimensions of the chest are shown in the cross section of Figure 3, while the length may be determined by conditions, though four feet will meet the average requirements. It will be noted that the compartment for the seasoning articles is provided with a slide cover shown clearly in Figures 2 and 4.

The legs are of the camp-stool type. Plates as shown in Figure 5 for receiving small bolts in the ends of the chest are attached to each leg. Small sliding door bolts are provided at the ends of each leaf on the under side, for engaging holes in the tops of the legs. By this arrangement it will be necessary to raise only one leaf if it is so desired.

F. A. Y., Meriden, Conn.

Locating the Motor's Troubles

A Chart by Means of Which Any Irregularities in the Operation of the Power Plant May Be Immediately Traced and Corrected—A Complete Guide for the Amateur

THE PRIZE CONTEST—Answer to the Third Question in the September Issue.

Very Complete

(The Prize-Winning Answer)

Effects.	Causes.
1—Backfire at carbureter.	No gasoline in tank. No air pressure. Gasoline tank vent stopped up. Clogged gasoline strainer. Water in gasoline. Dirt in carbureter needle valve. Mixture too lean. Sticking intake valve. Wire misplaced on spark plugs or magneto.
2—Dial registers no air pressure in gasoline tank.	Faulty guage. Leaking joint in air piping. Air pipes broken. Leaking trap screw gasket.
3—Cylinder misfire.	Sticking air regulator valves. Dirty spark plugs. Spark plug porcelain broken. Weak battery. Broken or leaking high tension wire.
4—Failure of Magneto	Wet high tension terminals. Sticking circuit breaker. Broken carbon brushes. Burned collector rings.
5—Engine pounds or knocks.	Carburetor not adjusted properly. Carbon in cylinders. Insufficient cooling water; examine pump. Slipping clutch. Worn gears in clutch. Shaft coupling loose. Flywheel loose. Damaged propeller.
6—Engine vibrates.	Worn or loose connecting-rod or main bearing. See No. 3—Cylinder misfire. Propeller wheel too large for engine.
7—Pre-ignition.	Cylinders misfiring. Pre-ignition caused by carbon in cylinders. Engine foundation bolts loose. Damaged propeller wheel. Incorrect spark plug gaps. Wet high-tension wires. Dirty distributor plate in magneto. Carbon in cylinders. Cylinders too hot. Slipped magneto coupling.
8—Lack of compression.	Sticking valves or faulty seating. Worn or broken piston rings.

PRIZE CONTEST

	Leaking exhaust or intake valves. Piston heads cracked.
9—No oil in oil sight (Stop motor immediately).	No oil in reservoir. Oil strainer clogged. Loose unions in pipe line. Check valves in pump stuck to seats. Suction pipe dirty.
10—Hot cylinder and exhaust pipe.	Drain cocks open. Water scoop obstructed; outside of hull. Water inlet at cylinders stopped; rust scales. Mud in sea-cock or piping. Water pump drive pin broken. Water pump requires overhauling.
11—Water in cylinders.	Continued misfiring of cylinders. Sticking exhaust valves. Weak exhaust valve springs. Exhaust pipe does not drain. Cracked exhaust manifold or cylinder water-jacket.
12—Loss of power. Decreasing revolutions.	Carbon. Fouled spark plugs. Faulty carbureter adjustment. Lack of compression. Bent propeller wheel or rudder. Foul hull bottom.
13—Pounding in stern.	Damaged propeller wheel or shaft. Loose propeller wheel. Loose rudder bearing. Worn stern or strut bearing.
14—Warm water in bilge.	Drain cocks on piping open. Leaking exhaust pipe at joints. Leaking water pipe.
15—Gasoline in bilge.	Leaky tank. Loose or broken joints in piping. Float valve in carbureter sticking.

Numbers 13, 14 and 15, while not exactly marine engine troubles, are close associates.

A further explanation of the above:

A knocking engine is some times diagnosed as having faulty internal mechanism, whereas the trouble really is unsteady working of moving parts from the misfiring of one or more cylinders. Pre-ignition is often to blame, caused by carbon in cylinders, hot spark plug tips, short circuit, small metal shavings that may be in the combustion chamber, etc. Carbon deposits in cylinders or on valves and valve seats can always be attributed to the liberal use of either lubricating oil or gasoline or both. A worn out or weak battery will sometimes be responsible for irregular explosions. When the voltmeter registers below normal voltage it indicates that the batteries require recharging.

An occasional examination of the wiring is good practice. Run from the ground wire to batteries, spark coil and dynamos to switches for loose connections, broken wires, etc.

Spark plugs will require no atention if the correct amount of oil and gasoline is used. Remove plugs for examination when necessary and if coated and wet would indicate that too much oil is being used. Carbon shows a rich gas mixture and prevents plug from firing. A small, stiff brush and gasoline will readily clean the spark plugs. Plugs will deliver a most efficient spark when the points are 1/32 of an inch apart, or about the thickness of a dime. A set of plugs should be carried as part of extra equipment.

Poor cylinder oil causes loss of compression more often than leaky valves. Good compression is shown by resistance on turning motor over when relief valves or pet cocks are closed.

Carbon may be removed from valves (regrinding valves) by using a fine grade of emery mixed with oil.

Valves should be absolutely clean and free from emery before replacing them.

Observance of the following might prevent engine troubles.

Do not rely entirely upon the strainer near the carbureter. Strain the gasoline as the tank is filled. It is best to shut off the valves at tank and carbureter after engine is stopped.

Use the best grade of cylinder oil as prescribed by the engine builders and keep a plentiful supply in the oil sump or reservoir.

The care of the clutch should be frequent oiling, as this part does not require adjusting very often.

The water pump should be examined occasionally to insure adequate cooling water.

Weak batteries are responsible for difficulty in starting the motor. Do not leave any switches in contact while the motor is not running.

The foregoing may not be complete but it covers the gasoline motor's common ailments and offers the novice a few suggestions on where to look and what to do.

With a few changes to meet the special features of a particular outfit it can be adapted for general use.

L. K., New York City.

The Engine Chart Indicator

THE average engine trouble chart is nothing more or less than a page from a book put in a more convenient form. Among the various types of charts are found a few simple ones but as a rule they are more apt to be complicated and with this aim in view to construct an effective and direct chart, the chart herewith shown or more rightly called an engine chart indicator was designed.

On the average chart will appear a maze of various troubles likely to happen and as a rule it is like following a railroad map, to avoid any confusion of subjects and in order to concentrate the eye and mind on one particular subject at a time is the mission of this engine chart indicator shown by sketches.

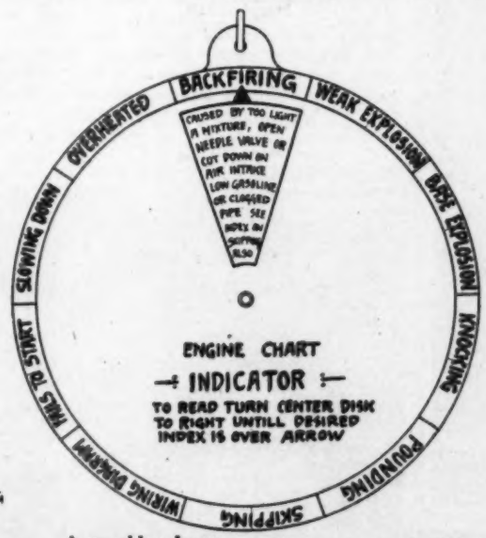
The subject and index as shown refer to a two-cycle engine generally, but may be applied to a four-cycle engine as well. At the heading and directly under each index is printed the main trouble that will most likely happen under normal conditions then follows other minor troubles that may cause the same thing printed below the head item.

Having run a two-cycle engine for the last six years and learned by the school of experience, I have enumerated a list of troubles that arise when running an engine of this type, and find that if I had known some of these points referred to I would have had to take the engine down fewer times and incurred less expense in hiring a mechanic to start the engine.

The engine trouble chart indicator shown consists of three discs made of sheet metal or good quality cardboard. The lower and outer discs remain stationary while the center disc is fitted in such a manner as to revolve, being fastened together by a hollow rivet or split rivet or pin. These discs should not be fitted too loosely, but just a neat turning pressure on same so that they will not revolve of their own accord with the movement of the boat. An indicator about 8 inches in diameter will be found most convenient and will look most shipshape if it lines up with other indicators fitted on board ship.

Only one reading or center disc is shown but if the subject is desired to be enlarged, and the diameter of the indicator would be too large more of these discs can be easily added by simply cuting a hole through the center disc similar to the outer disc which would enable the second disc fitted to be easily read in the same manner as the center disc. I would suggest that the indicator or chart be painted white with black letters. This chart indicator should be fitted with a lug at the top for hanging up on the bulkhead.—W. R., Quincy, Mass.

SECTION THROUGH INDICATOR



DETAIL OF CENTER DISK

A trouble chart of novel design which consists of three discs, one of which can be revolved. The center illustration shows the chart turned so that backfire remedies are indicated and similar remedies for other engine troubles may be made to appear under any heading indicated

Eight Years of the Prize Contest

An Index to the Immense Amount of Valuable Information Which Has Appeared in One Department of MoToR BoatinG—The Best of the Articles Soon to Appear in Book Form

January 1910
1—Treating the Bottom of a Salt Water Cruiser
2—The Use of Cement in Wooden Hulls
3—The Air Supply for the Carbureter

February 1910
1—How to Make a Tool Locker
2—Emergency Rigs for Motor Boats
3—Steering Equipment for Open Boats

March 1910
1—How to Make a Chart Case
2—Hulls, Ballast and Seaworthiness
3—Which Way Should Twin Screws Turn

April 1910
1—Interior Arrangements for Open Boats
2—To Ride Out a Storm in a Motor Boat
3—Round Bottom Versus Sharp Bilge

May 1910
1—How to Make a Sextant
2—Ventilating the Cabins of Small Cruisers
3—The Tender for a 30-Foot Cruiser

June 1910
1—Installing an Under-Water Exhaust
2—Buying a Second-Hand Boat
3—What are the Advantages of Flare?

July 1910
1—The Big Motor Boat Meet at Peoria
2—Making a Cover for the Open Boat
3—Removing and Replacing Piston Rings

August 1910
1—The Jury Rudder and How It Works
2—Mixing the Fuel and the Lubricant
3—Novel Events for Regatta Day

September 1910
1—Making a Water-Tight Skylight
2—Separating Couplings and Pipe Fittings
3—Keeping the Ignition System Dry

October 1910
1—A Binnacle for the Small Cruiser
2—The Galley Stove and its Installation
3—Installing a Motor in a Canoe

November 1910
1—Hauling Out the Motor Boat
2—Placing the Engine in the Hull
3—Lessons Learned from the Past Season

December 1910
1—How to Build an Ice-box
2—A Support for the After Light
3—To Find and Correct Compass Errors

January 1911
1—How to Build an Extension Berth
2—Bulkhead Arrangement of Controls
3—The Best Bow and Stern for a Cruiser

February 1911
1—How to Rig Up a Signal Mast
2—The Best Position for the Rudder
3—Raised Deck vs. Trunk Cabin

March 1911
1—How to Make a Spray Hood
2—What is the Best Galley Arrangement?
3—Towing the Tender

April 1911
1—How to Build an Engine Housing
2—Handling Ground Tackle
3—Government Charts

May 1911
1—Screens for the Side Lights
2—Propeller for Engine and Hull
3—What Changes Shall I Make?

June 1911
1—Boarding Steps for the Cruiser
2—Fitting Out a 30-Footer
3—Suggestions for the Beginner

July 1911
1—Converting a "Banker" to Power
2—Removable Davits for the Cruiser
3—Adjusting the Carbureter

August 1911
1—How to Build a Turning Buoy
2—Ballasting the Cruiser
3—Taking Her Through the Canals

September 1911
1—How to Make a Pipe Berth
2—Heating a Small Cruiser's Cabin
3—How to Prevent Carbon Deposits

October 1911
1—Suggestions for Hauling Out
2—Running Water for the Cruiser
3—Tides and Tidal Waters

November 1911
1—A Seat for the Man at the Wheel
2—Striking the Waterline
3—The Best Position for the Motor

December 1911
1—How to Make a Cockpit Awning
2—Truing a Bent Propeller
3—"Long Stroke" vs. "Short Stroke"

January 1912
1—Installing Power in a Yawl
2—Emergency Rigs for the Cruiser
3—Preparing for Southern Waters

February 1912
1—Making a Fireless Cooker
2—How to Canvas a Deck
3—The Electrical Equipment

March 1912
1—How to Build a Portable Table
2—Constructing a Rear Starter
3—Kerosene vs. Gasoline

April 1912
1—Exterior Arrangement for Cruisers
2—Boat Building Woods
3—Re-Finishing "Bright Work"

May 1912
1—Making a Water-Tight Hatch
2—The Dual vs. the Double System
3—The Why and How of Storm Oil

June 1912
1—Making and Wiring a Switchboard
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3—Installing a Toilet

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1—A Portable Cook Box
2—Moorings That Will Hold
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1—A Floating Boathouse
2—Laying Off a Race Course
3—Remedying Leaky Compression

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3—Starting Boats in a Race

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1—Installing the Gasoline Tanks
2—Rebabbitting a Worn Bearing
3—Installing a High Tension Magneto

November 1912
1—Building the Marine Railway
2—Covering the Boat for the Winter
3—Interesting Cruise Experiences

December 1912
1—The Best All Around Dinghy
2—The Steering Gear for the Cruiser
3—How to Run on Kerosene

January 1913
1—A Steam Box for Amateur Builders
2—Gearing Motor to Propeller Shaft
3—Preserving the Wood in Boats

February 1913
1—The Steering Gear for the Runabout
2—Disposing of the Bilge Water
3—Best Proportion of Beam to Length

March 1913
1—Building a Club Float
2—Boring the Shaft Log
3—The Storage Battery

April 1913
1—A Water-Tight Companionway
2—Lining Up the Propeller Shaft
3—The Automobile Engine for a Boat

May 1913
1—Putting the Boat Into Commission
2—Fitting the Garboard Plank
3—Supplying Fuel to the Carbureter

June 1913
1—An Awning for the Open Boat
2—Repairing a Leaky Cylinder
3—Using Low Grade Fuel

July 1913
1—Methods of Handicapping
2—Equipping for a Cruise
3—Constructing the Engine Bed

August 1913
1—The Stern Bearings for a Cruiser
2—Diminishing Deviation
3—Preventing Electrolysis

September 1913
1—Making a Self-Bailing Cockpit
2—Power Output Per Cylinder
3—Why Do Boats Squat?

October 1913
1—Putting the Boat Out of Commission
2—Protecting the Bow and Stern
3—Storing the Life Preservers

November 1913
1—Changes in Motor Design
2—A Cabin Wall Rack
3—The Best Cabin Interior

December 1913
1—Fitting a Swinging Port Light
2—Cleaning the Fuel Tanks
3—Selecting a New Design

January 1914
1—The Best Cabin Arrangement
2—Lengthening Out the Boat
3—Electric Lighting on a Motor Boat

February 1914
1—Advantages of Bilge Keels
2—Spark and Throttle Controls
3—Getting the Motor Aboard

March 1914
1—Motor Boat Fastenings
2—Converting the Open Boat
3—Removing the Flywheel

April 1914
1—The Things That Cause Vibration
2—Replacing a Broken Plank
3—Changes for 1914

May 1914
1—Stopping the Troublesome Leak
2—Straightening the Sprung Shaft
3—Joints Between Stem and Keel

June 1914
1—A Motor Boatman Should Know
2—Buying a Second-Hand Boat

July 1914
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2—Laying Down a Boat's Lines

August 1914
1—The Best Exhaust
2—Stowing the Anchor on a Cruiser
3—Raising the Boat's Stern

September 1914
1—Utilizing the Exhaust
2—Providing an Emergency Rudder
3—Ventilating the Galley

October 1914
1—Which Way Should the Boat Steer?
2—How to Make an Engine Cover
3—Limits of Shaft Inclination

November 1914
1—Changes in One's Power Plant
2—Taking Care of Extra Gasoline
3—The Best Type of Stern

December 1914
1—Keeping a Motor Boat's Log
2—Constructing an Extension Transom

January 1915
1—Changes in Cabin Arrangement
2—Fastening the Frames and Floors
3—What to Use in the Bilge

February 1915
1—Keeping the Thief Out
2—Using and Taking Care of Charts
3—A Water-Tight Flush Hatch

March 1915
1—Rudders for Small Cruisers
2—Constructing a Landing Stage
3—A Home-Made Gasoline Gauge

April 1915
1—Different Steering Positions
2—A Cover for the Open Cockpit
3—Engine Installation in a Hydroplane

May 1915
1—The Object of a Handicap Rule
2—Making and Fitting a Gasket
3—Getting Off Bottom

June 1915
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3—Fitting the Stuffing Box

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1—The Overheated Motor
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3—Stowing the Signal Flags

August 1915
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2—The Automatic Throttler
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September 1915
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2—Getting the Tender Aboard
3—Putting Power in the Rowboat

October 1915
1—Patching Up a Bearing
2—Carrying an Extra Supply of Oil
3—A Bow Rudder for Your Hydro

November 1915
1—Open or Solid Deadwood
2—Stopping Up the Leak in the Tank
3—Steering the Boat from the Side

December 1915
1—Starting in Cold Weather
2—Building a Folding Dinghy
3—The Relation of Buyer and Builder

January 1916
1—Advice for the Beginner
2—This Winter's Alterations
3—The Coaming of an Open Boat

February 1916
1—How Many Cylinders
2—From Make and Break to Jump Spark
3—Harnessing the Main Engine

March 1916
1—What Makes a Hull Seaworthy?
2—Propeller-Rudder Arrangements
3—Changing the Shaft Hole Location

April 1916
1—Removing Broken Lag Screws
2—Laying Out the Race Course
3—Installing a Universal Joint

May 1916
1—The Fuel Situation
2—The Absent Owner's Anchor Light
3—Permanent Moorings and Buoys

June 1916
1—Helping Uncle Sam
2—The Inexpensive Lighting Outfit
3—Making a Unit Power Plant

July 1916
1—Handling the Dory in a Seaway
2—Launching from a Wharf
3—The Ideal Engine Compartment

August 1916
1—Planning for a Cruise
2—A Satisfactory Portable Table
3—Wireless for the Small Cruiser

September 1916
1—Figuring the Boat's Speed
2—The Satisfactory Bilge Pump
3—Fitting a Folding Windshield

October 1916
1—Killing the Carbon Jinx
2—Cleaning the Gasoline Line
3—A Fish Box for Your Cruiser

November 1916
1—Have You Stopped that Leak?
2—Increasing the Factor of Safety
3—The $1,000 Cruiser

December 1916
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2—Your Storm Curtains

January 1917
1—High-Speed vs. Heavy-Duty
2—A Place for Your Shore Clothes
3—The Boarding Steps

February 1917
1—The Clean and Quiet Boat
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3—Wiring the Small Cruiser

March 1917
1—Grinding a Motor's Valves
2—Taking Steps to Safeguard the Anchor
3—Hinged Water-Tight Hatches

April 1917
1—Overhauling a Marine Motor
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3—Timing the Ignition System

May 1917
1—Equipment for Offshore Cruising
2—Thawing Out the Frozen Piston
3—Converting a Trunk-Cabin Cruiser

June 1917
1—Purchasing Through an Agent
2—Home-Made Navigation Equipment
3—The Pressure Water System

July 1917
1—Don't Give Up the Ship!
2—The Dynamo Cut-Out
3—Fitting a Gun Mount

August 1917
1—Keeping the Wood Surface Bright
2—The Motor-Driven Club Tender
3—Comfortable Sleeping Quarters

September 1917
1—Be Prepared for Spring
2—Keeping the Water Inlet Clean
3—Charging a Storage Battery

October 1917
1—Caught in a Fog
2—Setting the Valves
3—Hauling Out for the Winter

November 1917
1—As Others See the Prize Contest
2—A Table for the Open Boat
3—Locating the Motor's Troubles

December 1917
1—How to Save Fuel
2—An Ice-Box for a Cruiser

As MoToR BoatinG's circulation is real circulation no back numbers are available. Be a subscriber and you will be sure of your copy each month

A Real Ocean-Going 65-Footer

A 65-Footer Having Comfortable Sleeping Accommodations for Eleven Persons. Her Hull is of Sturdy Construction and the Interior is Finished in Hardwood Highly Polished

IPHIS, designed by Morris Bulkley and Halliday, Naval Architects, of Vancouver and Victoria, and built at Hong Kong, China, is one of the most attractive boats navigating the Canadian waters. She is owned by D. H. Bale, of Victoria, B. C.

With an overall length of 65 feet and a beam of 13 feet she draws 5 feet 9 inches of water. For a boat of her size she is considered one of the strongest and best finished of the craft on the Pacific Coast. This 65-footer is of sturdy construction throughout, the hull being built entirely of teak and other hard oriental woods. She is copper-fastened and lined from the bottom of the keel to the waterline.

No expense has been spared to make the interior of the boat complete in every detail. The upholstery is of the finest Morocco, which blends well with the highly polished hardwood trimming. Plenty of drawers, lockers, wardrobes and storage space has been provided for. The drawers are lined with camphor wood to protect them from insects.

The main saloon is arranged with transom berths, a portable dining table, two sideboards, and a built-in fireplace having a marble top and sides and tiled hearth. The bathroom having a tiled floor and located aft of the dining room is fitted with a porcelain bath and wash basin, with full supply of hot and cold, as well as fresh and salt water.

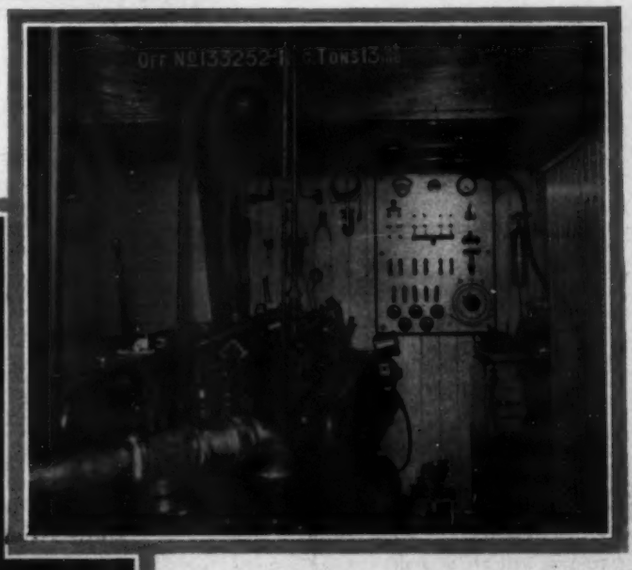
The power plant installed in Iphis is a six-cylinder, heavy-duty Buffalo motor rated at 60-70 h. p. and having a bore and stroke of 7x9 inches. Mr. Bale claims that with this efficient engine he recently made a trip of 95 miles in eight hours and ten minutes using only 49 gallons of distillate. The fuel, lubricating oil and water tanks, are constructed of heavy copper and have a combined capacity of 1,332 gallons. The engine-room, which is well lighted and ventilated, besides housing the main power plant, is furnished with a 3 h. p., four-cycle, direct-connected electric lighting and heating apparatus with a 35-volt generator.

A 12-foot power tender and a 9-foot tender, both splendid sea boats are carried on deck. Mr. Bale uses his boat for cruising parties and has carried as many as 45 elderly people or 60 young people at one time to his summer home which is 12 miles away. The sleeping arrangement of Iphis has been laid out so as to comfortably accomodate eleven persons, and provision has been made for two extra berths in the engine-room in case of emergency. She is comfortable and seaworthy and her owner claims that she was built for comfort and not for speed although she makes good time.

The galley is unusually complete, having a large range, cupboard, lockers and dish racks. A refrigerator is included in the equipment.

Everything in the way of convenience has been carried out in the design of Iphis. She makes a pleasing appearance and includes many attractive features.

Iphis is 65 feet overall by 13 feet beam and a draft of 5 feet 9 inches. Her hull shows a good flare forward which enhances her seaworthiness



A view of the engine-room showing the 60-70 h.p. heavy-duty Buffalo motor which is responsible for the satisfactory performance of Iphis

Looking aft in Iphis' dining saloon, richly furnished and showing the folding table, ample locker space and the built-in fireplace

Mr. Bale has made the statement that his Buffalo engine has given him splendid satisfaction, and that should he return to the Orient, he would sell Iphis, and have a new boat built over there for cruising purposes having a 60-70 h.p. or a higher rated Buffalo engine installed, as he considers them a most efficient power plant.

MY IDEAL CRUISER

Halcyon, a 28-Footer

No. 10 in the Ideal Cruiser Series—A Boat of Somewhat Different Design Than Any of Her Forerunners

By A. J. Stadler

MY Ideal Cruiser: Oh what a broad term! The cruiser that would be my Ideal might be just what my fellow yachtsmen would not want, and besides if I had a fatter pocketbook, it might be that I wouldn't want the boat whose designs I am interested in under my present circumstances. Aside from that, if I had to keep my boat up some narrow, crooked and shallow creek, then quite a different design would have to be my Ideal. But owing to my lean purse, in the first place, and having plenty of deep and open water in which to navigate, the design which I am showing is my Ideal.

To start with, I want a thoroughly seaworthy boat, and to accomplish this end I have designed one having considerable forefoot. The advantages of this type of boat are threefold: namely—it greatly increases the headroom in the cabin (a feature quite important with me, as I am a six-footer and I have none too much hair on my head for protection); it gives the forward sections more deadrise, and last but not least, it helps immensely to hold a boat to her course. It, however, must not be forgotten that anything which will help to hold a boat to her course will, on the other hand, prevent her from being maneuvered quickly. Another advantage gained with plenty of forefoot is that the hull is structurally much stronger than a shallow type of boat, thereby making her capable of weathering a heavy storm at sea.

I have given her a fair amount of flare extending well aft of amidships, so designed to throw the spray clear of the hull and to keep the cockpit dry when running in a heavy sea, and because the stern is rather wide, I have kept the buoyancy proportionately light, so that the after end of the boat can bury a little when the bow is pushed into a chop. Considering all these points, together with the fact that the boat will carry a reasonable amount of ballast, she ought to be as good a sea boat as any of her size.

In the matter of rudders, I am greatly in favor of the outboard design, because in case of an accident to the steering gear it is easily get-at-able. And, too, this type of rudder is claimed to be one of the strongest designs of rudder if properly installed.

The trunk cabin shown is constructed of heavy wood having removable sash fitted into the sides which provide a supply of light and air.

In arranging the sleeping accommodations, rather than trying to make them extra long, I have endeavored to make them as wide as is possible. In fact, when open, they extend across the full width of the boat. Right here I might declare my indebtedness to the Prize Contest Department in Questions and Answers appearing in MoToR BoatinG each month, for the design of the extension transoms which to my mind can hardly be improved upon, as well as for several details which will be found throughout the construction of my 28-footer Halcyon.

I remember one time when we were cruising on a boat having berths 10 feet long, and with two of us trying to sleep in each bunk, we would get our feet entangled in the bedding. The fellow nearest the bow having slept with his head nearest the bow, and the other fellow with his head nearest the stern.

A couple of years ago when out on a cruise, all hands decided to take a cross-country hike, so we made our start at about eight o'clock in the morning, and after walking not less than twelve miles, the last three of which were over a rough beach, we got back to the boat, and then can you imagine just about what we felt like while we sat there waiting for another hour or more for the cook to prepare dinner.

That occasion taught me my lesson, and you may depend that any boat I own from now on must be equipped with a fireless cooker.

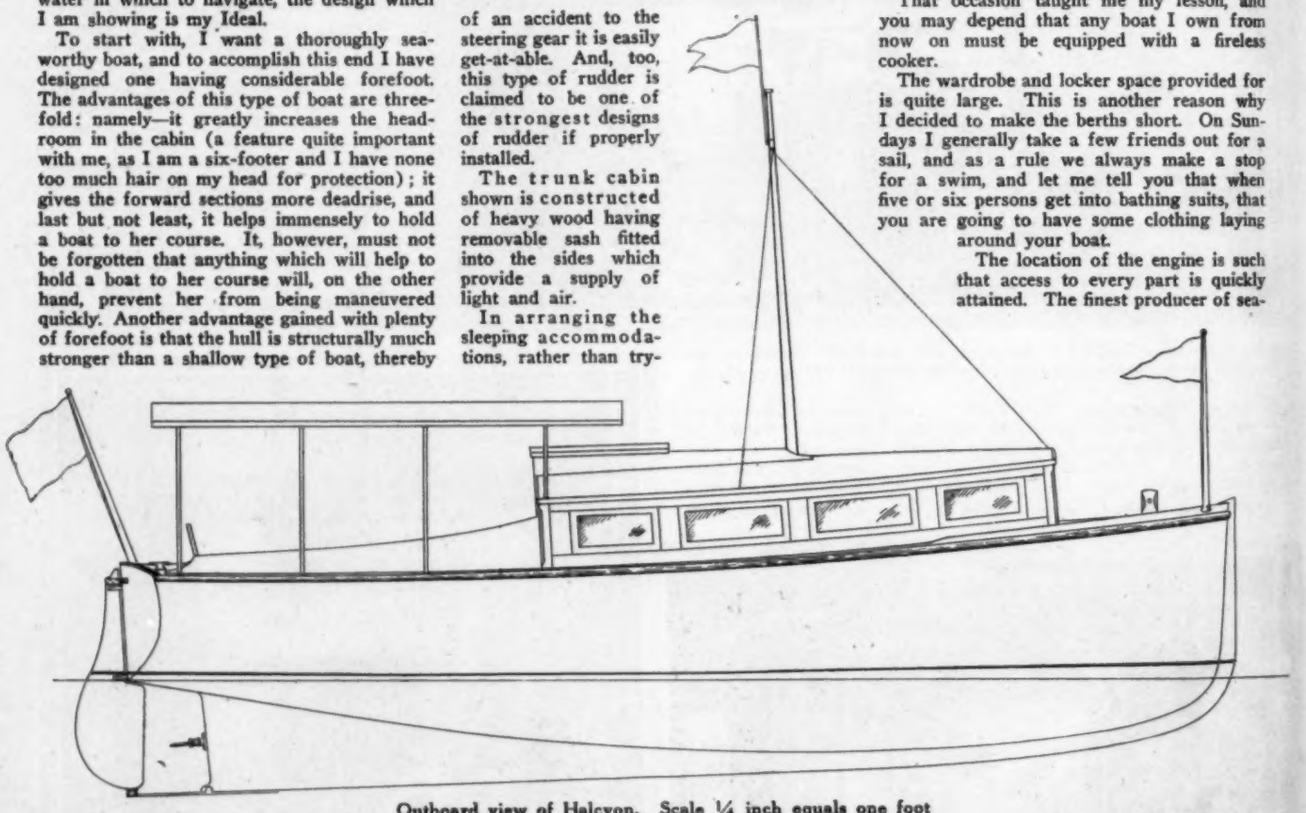
The wardrobe and locker space provided for is quite large. This is another reason why I decided to make the berths short. On Sundays I generally take a few friends out for a sail, and as a rule we always make a stop for a swim, and let me tell you that when five or six persons get into bathing suits, that you are going to have some clothing laying around your boat.

The location of the engine is such that access to every part is quickly attained. The finest producer of seasickness that I know of, is having to crawl into a hot, stuffy engine compartment when a boat is rolling considerably in a heavy sea.

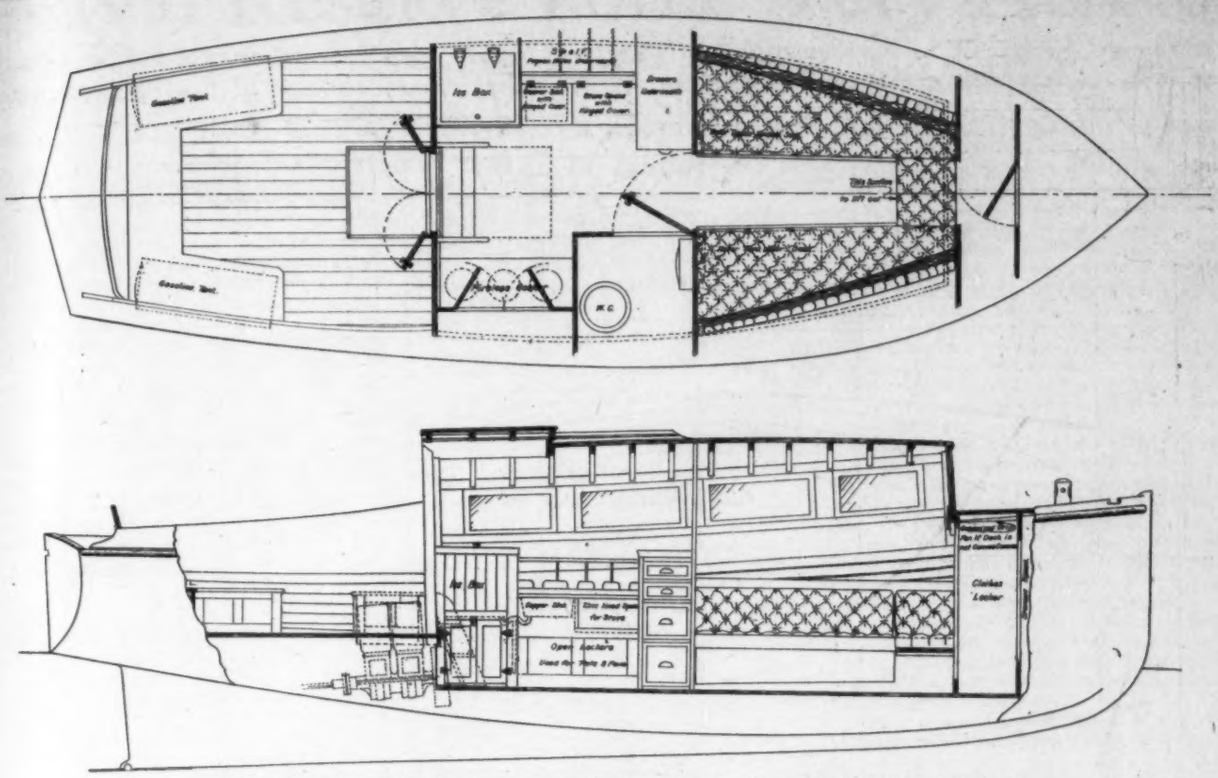
There should be a drip pan fitted to the engine bed, before the engine is installed, and so arranged as to catch the drip from the carbureter as well as from any other part of the motor. You will notice in the plans that the after side of the companion steps are designed in such a way that when they are put in place, they effectively cover the part of the engine which protrudes into the cabin. This convenient arrangement means that the noises from the engine are not only muffled, but the oil is kept from splashing all over the boat, and at the same time, as I have

Ideal Cruisers Which Have Appeared in MoToR BoatinG

No. 1. Sunray	36-Footer	February Issue
No. 2. Spook	38-Footer	March Issue
No. 3. White Cap	26-Footer	April Issue
No. 4. Ruth	35½-Footer	May Issue
No. 5. Flashlight	30-Footer	June Issue
No. 6. Dawn	32-Footer	July Issue
No. 7. Cygnet	25-Footer	August Issue
No. 8. Jerry	40-Footer	September Issue
No. 9. Trident	24½-Footer	October Issue



Outboard view of Halcyon. Scale ¼ inch equals one foot

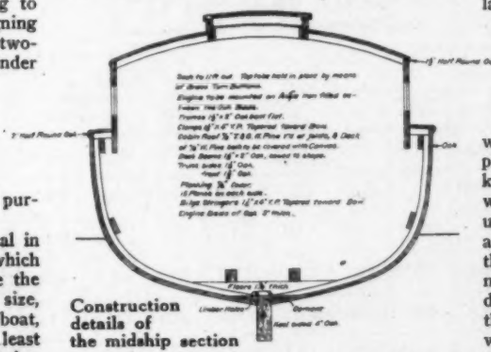


Inboard profile and interior arrangement plan reproduced to the scale of ¼ inch to the foot

mentioned above, the location is such as to permit easy access in case the engine should get balky or need cleaning. The controls and a rear-starter are to be mounted on the after bulkhead of the cabin so that the engine can be started and controlled without having to remove the housing or steps. In designing my ideal cruiser I have planned for a two-cylinder engine, but should a four-cylinder engine be desired, it would prove more convenient to have the companion hatch and steps on the starboard side of the boat, thereby allowing the extra length of the engine to extend into the cabin, which can be covered with a special housing built for that purpose.

The gasoline tanks, which are cylindrical in shape, are placed under the cockpit seats, which to my mind is the proper place to store the tanks in any ballasted cruiser of this size, as it not only eases the motion of the boat, but the position is such as to receive the least amount of movement when the boat is being thrown about in a seaway.

The water tanks are placed under the transoms and are filled through a pipe which leads to the forward deck. This arrangement reduces the splashing of the fluid in the tanks to a minimum, and at the same time because of the fact that there is no splashing of the fluid in the tanks, the danger of being torn from their fastenings is also greatly lessened. The gasoline tanks should be fastened over the drip pans which are made to drain outboard, this not only eliminates the danger arising from leaky tanks, but also keeps any gasoline that might be spilled when filling the tanks, from getting down into the bilge. The matter of water supply is easily attended



Construction details of the midship section

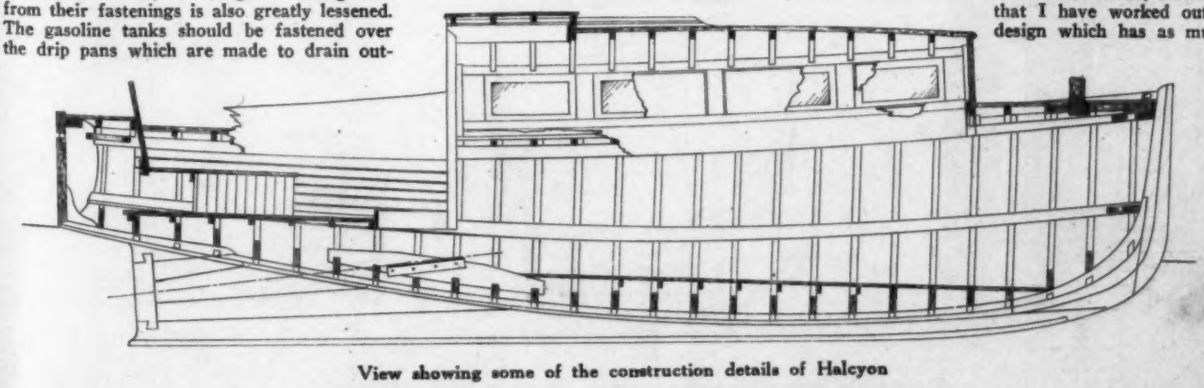
to by means of a small air pump, which can be used at the same time to pump air for the whistle.

Coming back to the frame of the boat, you will notice that the ribs are dovetailed into the top of the keel, and then a screw is driven drown through the rib and into the keel.

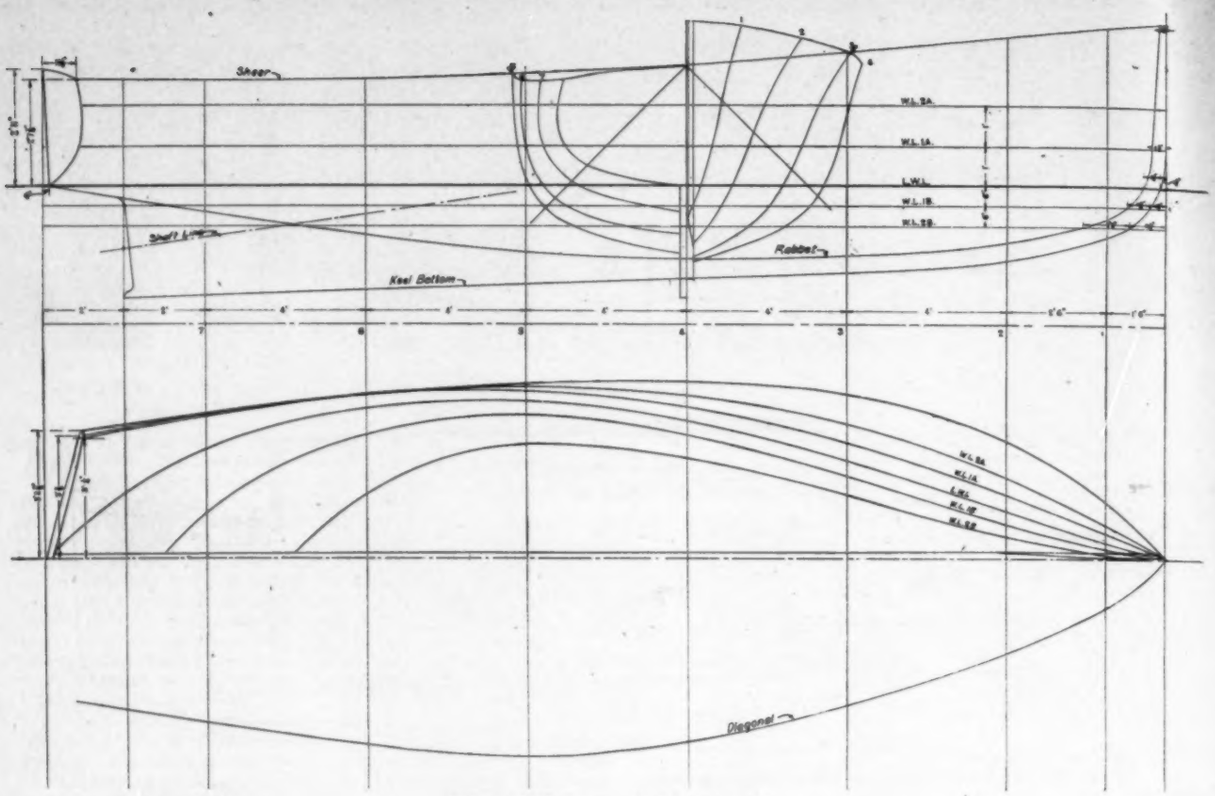
There will be no limber holes cut into the bottom of the ribs as this tends to weaken them right where most of the strength should be. The limber holes are to be cut into the floor timbers as shown, and then the bottom of the hull is to be filled with Portland cement. The floor timbers should be placed on the top of the ribs, because when placed in such a position they will be able to develop their maximum strength to hold the ribs in the dovetails on the keel.

Looking over the accompanying plans, you will notice that I have shown a long thin plank under the keel. This I would call a keel protector, or possibly in other words a worm feeder. As long as we have to shore up our boats on blocks when hauled out, there are going to be just so many spots on the boat that are not properly protected with a good, non-fouling paint, when put overboard, and don't forget that these little spots are pie for the worms. In the case of this thin plank, when the worms have devoured it, all that is necessary is to replace it at a small expense. When this keel protector is put on, its upper face and the bottom of the keel should be well painted with a non-fouling paint, and after that you may gamble that the keel of your boat is safe from the ravages of worms, as long as there is any of the protector left under it, and you keep it well painted.

Taken all in all, I believe that I have worked out a design which has as much



View showing some of the construction details of Halcyon



Lines of Halcyon. Scale ¼" = 1'

right to be called an Ideal Cruiser as any 28-footer afloat, and with the comforts and conveniences provided in the layout, she should prove a very attractive and seaworthy craft. Accommodations have been provided to withstand all weather conditions.

In relation to the galley, which is well ventilated, I have tried to work out an arrangement that will make the cook's job as cheerful and short as is consistent with serving good food. Everything is within easy reach, and the fireless cooker, which is included in the outfit, certainly helps to reduce the labor and care of cooking.

To avoid the danger of having the glass in the forward end of the trunk cabin broken by heavy seas or in handling the ground tackle, I have used two port lights set into a panel. When the sash in the sides of the cabin are removed, the cabin is as well-ventilated as the interior of a standing-top boat and does away with the necessity of a ventilating skylight. This will be thoroughly appreciated by those who have cruised in a boat where the only means of ventilation was ports.

The forward deck is white pine covered with canvas, the cover-board, coaming and cabin sides are of quartered oak, with the cabin top canvassed. The cockpit is finished throughout in oak.

The interior is finished in quartered oak and white enamel, which together with the brown corduroy cushions and curtains at the forward end makes a bright and cheerful-looking cabin.

A standing roof over the cockpit provided with curtains should be included in the outfit, as there are many days when the hot sun or driving rain would make the cockpit an unpleasant place to spend your time, and then, too, the cockpit will provide additional sleeping accommodations when fitted with a top and curtains.

In waters not infested by marine borers the worm feeder or keel protector can be omitted, but as the bottom of the keel is often chafed and splintered, this type of construction will enable the owner to secure a smooth keel at any time by simply replacing the strip.

Space under the forward deck could be used as a cable locker.

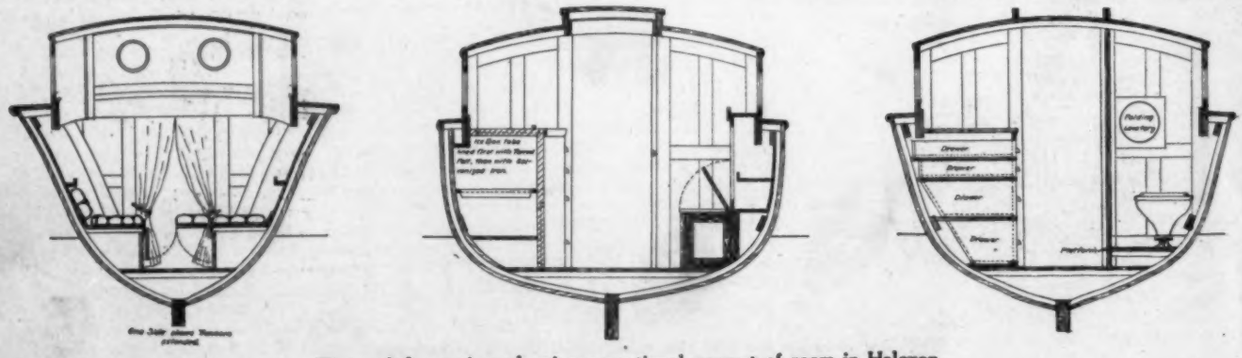
TABLE OF OFFSETS
FOR 28 FOOT CRUISER "HALCYON."

Dimensions are given in feet, inches and eighths
4.3.5 reads 4' 3⅝"

Dimensions given are to the outside of Planking, which is ⅞" thick.

STATIONS		FORWARD PERPENDICULAR	1	2	3	4	5	6	7
HEIGHTS ABOVE BASE	SHEER	7.7.4	7.5.6	7.2.3	6.10.0	6.6.0	6.3.4	6.1.6	6.1.2
	RABBET		2.8.3	2.0.7	1.8.6	1.7.6	1.9.7	2.3.1	2.10.0
	KEEL BOTTOM		2.2.5	1.7.3	1.3.5	1.1.7	1.0.2	0.10.3	0.8.5
HALF BREADTHS	SHEER	0.0.3	1.5.1	2.11.2	4.1.2	4.5.0	4.4.4	4.1.3	3.7.3
	WL 2A	0.0.3	0.10.1	2.0.2	3.4.3	4.0.6	4.3.4	4.1.1	3.7.6
	WL 1A	0.0.3	0.7.5	1.6.1	2.10.6	3.9.3	4.2.2	4.1.1	3.7.7
	L.W.L.		0.4.6	1.2.2	2.5.3	3.5.2	3.11.2	3.9.1	2.8.7
	W.L. 1B		0.2.7	0.9.2	2.0.6	3.1.1	3.7.2	3.1.2	1.1.6
	W.L. 2B		0.1.1	0.6.4	1.6.3	2.6.1	2.10.2	1.7.2	
DIAGONAL			13.3	2.4.5	3.8.3	4.7.2	4.11.5	4.8.1	4.1.3

The diagonal is taken @ 45° and intersects the perpendicular 6.5.8 above Base Line.



Three of the sections showing exceptional amount of room in Halcyon

Naval Reserve Force Very Active

The Fact That War Is Being Waged Three Thousand Miles Away Having No Effect Upon the Preparations for Real Service—Many Reservists Go Into Other Branches of Government Service

RESERVISTS FOR THE MERCHANT FLEET

THE forty fortunate Reservists of the Second Naval District who were chosen from the large number of applicants to attend the sea and shore school for turning out junior officers have reported to the office of the Supervisor of the U. S. Naval Auxiliary Reserve in the Third District. More than 200 applicants were filed at the enrolment office by those volunteering for duty in this branch of the service. The men who were picked for the detail were ordered to equip themselves with heavy civilian clothes, the Bluejacket's Manual and the 1917 edition of Bowditch. They have all been assigned to merchant vessels as third-class quartermasters and are now at sea where they will remain for two months. Following that they will attend a navigation school ashore and see further duty afloat before receiving their appointments as warrant boatmen. Each will be promoted according to his ability.

The Allies' navies are keeping the German fleet penned up within its canal, but it is the merchant vessels that are seeing the active fighting. And although only forty Reservists have been called at this time, there will be room for many more. The tonnage of cargo vessels owned and controlled by the Government is increasing by leaps and bounds, and before the end of the next year will amount to 9,000,000 tons and as each ship is commissioned she will be manned in part from the personnel of the naval forces.

This opening for men of ability and good character to get into immediate active training in the Cadet Officer's School of the Naval Auxiliary Reserve is keenly appreciated by the Naval Reservists and there are few among them who have not thought seriously of going into the merchant marine.

It is the purpose of this school to provide an intensive training system of practical and theoretical training whereby eligible men may fit themselves to qualify as junior deck officers on Naval Auxiliary ships.

To be eligible for this training, candidates must be between seventeen and twenty-three years of age, have had an education in mathematics through logarithms and trigonometry, and be capable of passing the medical examination of the Navy.

Applicants will be enrolled in the Naval Auxiliary Reserve Force, given the rating of quartermaster, third class, and assigned to ships in the coastwise trade, where they will serve for a period of about two months. During this period they will do ship's work and follow a prescribed course of study and will report progress to the Supervisor.

Having successfully completed this part of the course they will be relieved from sea duty and will enter the school of navigation providing for a course extending over a period of eight weeks, and comprising piloting, dead reckoning and navigation.

Having passed the examination at the end of this period, candidates will then be assigned

Lieut. Harold S. Vanderbilt, U. S. N. R. F.

Ensign William H. Vanderbilt, U. S. N. R. F.

Roll of Honor

Names of Persons Connected with the Motor Boating Industry Who Have Gone into the Service of Their Country

Aerothrust Engine Co., La Porte, Ind.
C. Zeisig, Corporal.
T. Shenk, Private.

Blood Bros., Kalamazoo, Mich.
S. M. Nahikian.

Carlyle Johnson Machine Co., Manchester, Conn.
S. H. Simon, Home Guard Reserve.
J. S. Wolcott, Home Guard Reserve.

Defoe Boat & Motor Wks., Bay City, Mich.
W. E. Whitehouse, Navy.
A. Hutchins, Navy.

Detroit Lubricator Co., Detroit, Mich.
N. Ross Meek.
J. D. Crane.

Du Pont Fabrikoid Co., Wilmington, Del.
W. T. Garrett, Navy.
A. W. Carpenter, Aviation School.
L. A. Bennett, Officers' Training Camp.
J. P. Bushnell, Ordnance Dept.
M. G. Jensen, National Army.
H. F. Litzenberg, National Army.
C. E. MacShane, National Army.
H. P. Hitchcock, National Army.
Wm. McKinney, Militia.

Durkee & Co., C. D., New York City
Wm. Oliver, 7th Infantry.
W. Bendix, 14th Infantry.
H. Reilly, 2nd Naval Batallion.

Ericsson Mfg. Co., Buffalo, N. Y.
H. R. Dilks, 1st Lieutenant.
F. N. Diall, Private.
H. E. Anderson, Private.

Evinrude Motor Co., Milwaukee, Wis.
O. A. Dole.

Gies Gear Co., Detroit, Mich.
H. E. Futnam.

Great Lakes Boat Building Corp., Milwaukee, Wis.
C. Christensen, Naval Reserve.
R. H. Hubbell, Inspector.

International Life Suit Corp., New York City, N. Y.
Chas. Wymard, member of Ambulance Unit.

MoToR BoatinG
A. F. Loomis, U. S. N. R. F.
J. A. Mulcahy, U. S. N. R. F.
J. Hanan, U. S. A.
M. Sullivan, U. S. A.
E. L. Tompkins, U. S. A.
H. A. Davenport, U. S. A.

Northwestern Motor Co., Eau Claire, Wis.
W. C. Johnson, 2d Officers' Training Camp.

Racine Boat Co., Racine, Wis.
C. Godske, Wisconsin Medical Corp.
P. Peterson, Battery F. Wisconsin.

Regal Gasoline Motor Co., Coldwater, Mich.
H. Robinson.

S K F Ball Bearing Co., Hartford, Conn.
J. Kepke, 1st Lieutenant, Coast Art.
C. L. Drake, 1st Lieutenant, Ordnance.
Benj. Anderson, Hospital Unit.
E. W. Brumley, U. S. N. R.
C. Bjork, U. S. N. R.
D. W. Sampson, U. S. N. R.
W. H. Holby, U. S. N.
J. Nolan, C. N. G.
G. L. Genthorn, Corp. C. A.
E. R. Hedstrom.
Chas. Rowland, Naval Reserve.
C. P. Trumbull, 102d Inf. A. E. F.
R. Brown, Machine Gun B.
J. H. Felhage, U. S. N. R.
Edward Roberts.
Sidney Richards.
J. Saunders.
H. Killian.
Jas. Shea, Machine Gun.
Wm. Dwyer, Hospital Unit.
G. Abgar, French Army.
B. Sahagian, French Army.
J. H. Hodgkins.
Wm. Ingraham.
J. Johnson.
R. Krieger.
Christ. Martin.
A. Mae.
A. Prestage.
B. Scanlon, Cavalry.
H. Thomas.
C. Hannon.
D. Balfour.
P. Butler, Troop C.
R. Perry, Co. K., C. N. G.

Sterling Engine Co., Buffalo, N. Y.
N. Guyette.
J. Jasper

(*Continued on page 52*)

to ships in the coasting trade as student officers, standing watch with the regular ship's officers, taking sights and becoming proficient in both practical and theoretical navigation.

After about two months in this status, the student officer will be relieved from duty afloat and will take a final examination, upon the successful completion of which the student officers will become available for active service on vessels of the Navy.

MUCH INTEREST IN AVIATION

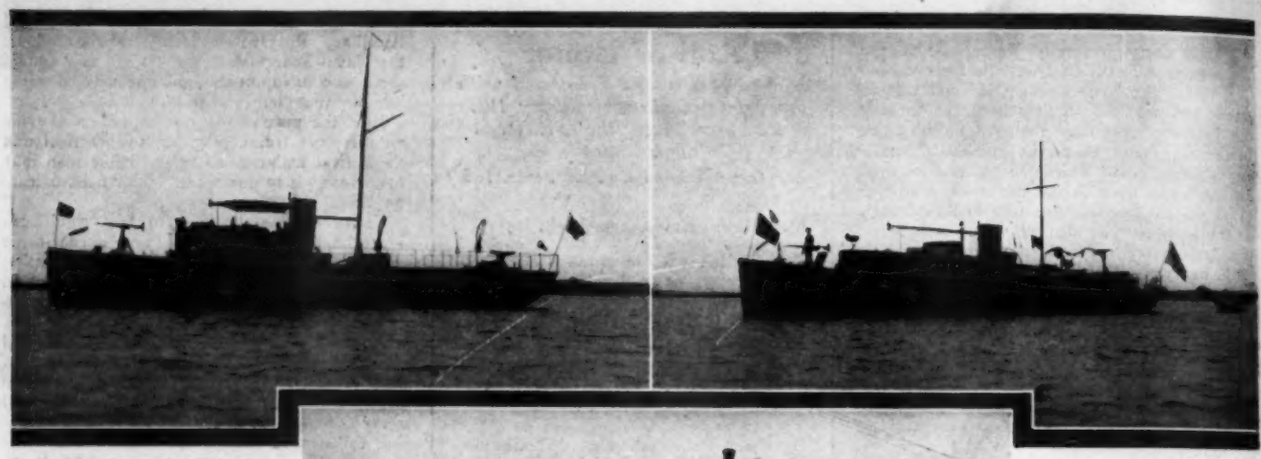
The Auxiliary Reserve, however, is not claiming quite all the attention of the Reservists. The closing of the enrolment in the Flying Corps, the new ensigns in uniforms, soccer, foot-ball, the Y. M. C. A., and the new patrol boats are all drawing their full quota of interest.

It is not stated at headquarters that the flying corps has been definitely closed, but because of the great number who have already been accepted for aviation, enrolment has been indefinitely suspended. Applications now on file in Washington will be acted upon, however, although such papers as are now in the enrolling office awaiting further data will be held and put through when enrolment opens. Indications are that Washington was tightening up on the number of men being taken into the aviation corps even before enrolments were suspended. In the latest returns from Washington only nineteen were accepted out of the forty applications acted upon, and the acceptances heretofore have been averaging six in ten.

GUN PRACTICE

Ever since the early spring months individuals have been clamoring for small-arm-practice. Some among them at least have had their hopes fulfilled for 100 men, comprising Company A and part of B of the Reserve Training Regiment of the Second Naval District have been sent to the range at Wakefield, Mass., where they will undergo the regular Navy course of target practice with small arms. They will remain a week or more. Within a few days another detachment of fifty men will have been sent from the Barracks. This opportunity may be viewed as a reward for the excellent showing Company A has made in the last few weeks. The dress review and parade in which it figured at the Barracks October 6 was conducted with the snap almost of a battalion from the Academy itself. The manual of arms was run through before Lieutenants Butler, Guthrie, Carr, Brachvogel and the other reviewing officers with a precision and perfection which would have been noteworthy in an aggregation of veterans. The training regiment as a whole is working hard. The regiment

(*Continued on page* 54)



S. P. 256, formerly Chipper, owned by I. C. Witherill

Absecam, now S. P. 371

Clubhouse of a prominent club on the Atlantic Coast which has been turned over to the Government and is being used as a naval base in the Fourth Naval District

Photographs by Pearce

Drusilla, now S. P. 372, owned by A. J. Drexel Paul of Philadelphia

Zipalong, built in 1907 by Lawley, still doing good work in the U. S. N. R. F.

Suzanne, a 110-footer, formerly Christina, owned by F. M. Kirby of Wilkesbarre, Pa.

Yard and Shop

Claire, a 32-Foot Cinderella Model

One of the pictures shown is of Claire, a 32-foot Crouch Bros. design of the celebrated Cinderella model, built by Hutchinson Bros., of Alexandria Bay, for Alfred Rogers of Toronto. She is powered with a Model FS six-cylinder 145 h.p. Sterling motor and has a speed of 34 m.p.h. Claire is a runabout that runs about all the time and mostly at top speed. A new boat late this season, she is an attractive sight at top speed, her polished mahogany sides reflecting the blues and greens of the water. She rides well a-top the water, throwing the spray high, but so far out that it does not drench the passengers.

A Lawley-Sterling 48-Footer

A subject of great discussion during the last two years refers to the construction of all craft so that they may be adaptable to war service and Satie A, a Lawley-Sterling production may be said to efficiently fill the bill. This 48-foot, 6-inch cruiser, with high sides, extremely well built, and having a beam of 10 feet, and a draft of 3 feet, is remarkably seaworthy. She was designed by Fred D. Lawley, and built by the Geo. Lawley & Son, Corp., of Neponset, Mass., for Edward C. Crossett, who summers at Wianno, Mass.

Two Model F, six-cylinder 145 h.p. Sterling motors turn Columbian architect propellers having a diameter of 23 inches by a pitch of 23 inches at 1,100 r.p.m., from which a constant cruising speed of 22 m.p.h. is maintained.

Satie A is a diversion in that she is of the round-bilge type. There is a wide flare at the bow and the lines are fast. The most impressive thing about this boat is that she is but 48 feet 6 inches, but appears to be considerably larger and even is so arranged that one gathers the same impression when viewing the interior. The many good points about the craft are visible at a glance and need no further dilatation here.

Kellogg Pneumatic Hydroplane

This boat which combines speed with efficiency is designed to ride upon air, to be propelled by air pressure and to use for this purpose that portion of the atmosphere which stands in front of the boat, thereby removing a part of the head resistance. An air propeller or fan is used to force the air through ports in the bottom of the boat, having two wing valves, one on each side of the main keel. The main keel is located under the center of the bottom and extends from the air discharge ports to a point near the stern, from which point it is free to sway or bend from side to side, thus forming the rudder. A steering column controls both the rudder and the air valves. The sides extend below the bottom to prevent the escape of air before it has served its purpose.

It is claimed that there can be no reverse with this type of craft, a novel form of brake has been provided to be operated by a foot pedal or otherwise.

This hydroplane is declared to be constructed of the very best materials, the hull is of sheet steel strongly reinforced with angles and I beams and having water-tight compartments throughout.

Compliment to Gray Engines from an Unusual Source

The Gray Motor Co., of Detroit, Mich., is in receipt of a letter from Colin Douglas, 357 Fourth Ave., New York City, stating that he has just recovered his Gray Model F engine No. 25208 which was stolen last summer and that the thieves had been captured and had confessed.

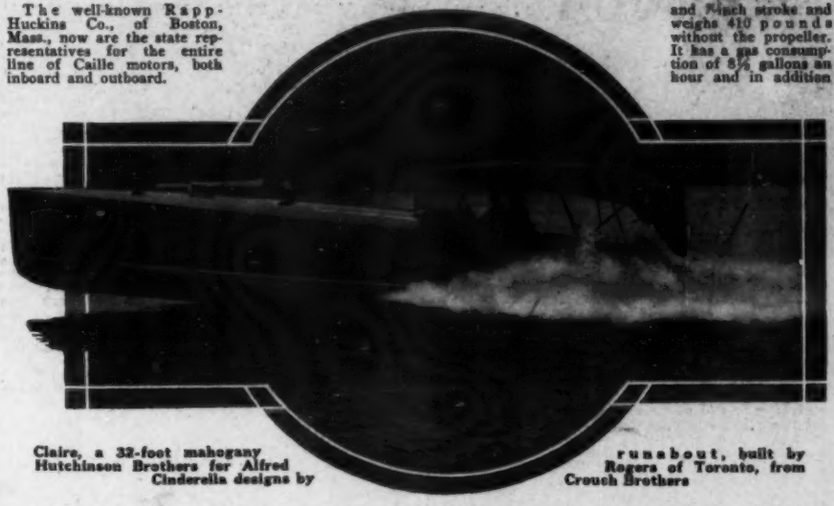
After a cross-examination it was learned that they made a careful inspection of several different cruisers before selecting the Gray engine, which they took out of his cruiser. He says the men were first class mechanics and he considered their choice a compliment to the Gray manufacturers.

Big Business in the East

The Caille Perfection Motor Co., of Detroit, Mich., one of the largest manufacturers of two-cycle marine engines, report through their Mr. A. S. Hyde that business in the East has been exceptionally good this season, this in face of the fact that times have been rather tight.

While business in the East this year was slow in starting, both Rochester and Syracuse dealers cleaned up their entire stock.

The well-known Rapp-Huckins Co., of Boston, Mass., now are the state representatives for the entire line of Caille motors, both inboard and outboard.



Claire, a 32-foot mahogany runabout, built by Hutchinson Brothers for Alfred Rogers of Toronto, from Cinderella designs by Crouch Brothers

A good live dealer in Providence, R. I., can become connected with this company and represent them for their entire line—an excellent chance for the right dealer.

A Military Tractor Biplane

One of the accompanying illustrations shows the latest military tractor biplane, a product of the Lawson Aircraft Corp., of Green Bay, Wis., and built according to the specifications of the United States Government. This machine is a primary training type and one of its chief points is its ability to fly slowly as well as running at high speed when necessary.

Besides being one of the best models for training aviators, this machine is also an exceptionally good reconnaissance type for spotting artillery back of the enemies' trenches owing to the fact that it is capable of hovering over the big guns steadily—thus giving the observer an opportunity to photograph the position of the enemy in action and report back his observations by wireless to the commanding officer.

There are a great many new points brought out in the Lawson tractor biplane that cannot be made public. Most of these important improvements and inventions are entirely covered up in the body of the airplane. The power plant is a Hall-Scott A-7a of 100 h.p. and drives a nut propeller of 8-foot diameter and 5-foot pitch at 1,400 r.p.m. This motor has a 5¼-inch bore and 7-inch stroke and weighs 410 pounds without the propeller. It has a gas consumption of 8½ gallons an hour and in addition to this an oil consumption of one-half gallon an hour.

Lawson tractor biplane, built by the Lawson Aircraft Corp., Green Bay, Wis.

The Lawson machine has the dual stick control. On its first flight, September 11, 1917, under the pilotage of Alfred W. Lawson, the machine left the ground in 40 feet run and when landing stopped within 70 feet after striking ground. This machine has remarkable inherent, hovering ability.

Miss Toledo, a New Patrol Boat

Among the illustrations is a picture of Miss Toledo, a patrol boat built by the Dachel-Carter Boat Co., of Benton Harbor, Mich., launched two weeks ago and now in government service.

The boat has a speed of 25 m.p.h. which is remarkable considering the heavy construction throughout and the weight of equipment. This boat is fitted with a Universal electric generating set, operating with the 10-inch searchlight, lighting the boat and running the electric motor to pump the bilge water and pump air for the whistle outfit. The boat is also equipped with a hot-water heating plant with a radiator in each compartment to insure dry and warm heating quarters in cold weather. The arrangement plan is exceptionally good and there is not an inch of waste space. The interior finish is white enamel, the spring cushions are dark green and the hardware is polished brass.

New 36-Foot Life-Boats for Coast Guard Service

The accompanying illustrations show the new type of self-bailing, self-righting motor life-boat recently built by the Camden Anchor-Rockland Machine Co., of Camden, Me., for the United States Coast Guard.

The Camden Anchor-Rockland Machine Company launched two of these 36-footers in July, 1917, and are now constructing more, which will be launched in October. The first two boats were delivered at the Coast Guard Station, New York, having made the run to New York from Camden. They left Camden Friday night, August 3, and arrived at Marblehead at 5 P.M. Saturday, on the way to New York, everything working fine, this trial proving the ability of the craft and being an excellent test of the sturdiness of the motor. The initial trials were held at Camden, under the supervision of United States Inspector Schofield, the craft being given a 7-hour run at a speed of 8 1/10 knots.

The power plant consists of a 40 h.p., four-cylinder Model FH Sterling motor, fitted with electric and hand starters. The motor is installed in the after-end box, which is a water-tight compartment.

Life-boats similar to these have been used by the U. S. Coast Guard for many years and are well known along the United States coasts. The old style boats were fitted with centerboards, while in the new type

A series of motor boat races held September 16 at Oshkosh, Wis., under the auspices of the Oshkosh Power Boat Club

The Champion Spark Plug Co., of Toledo, O., educating its employees concerning the selling value of window displays

An Addition to the Frisbie Plant

The Frisbie Motor Co., of Middleton, Conn., are making extensive additions to their plant. These consist of a second story on the front part of the factory, which will take care of the pattern shop, drafting room and office, and in addition to this on the rear of the factory first floor, an extension of about sixty feet by the present width of the building.

of boat necessary changes have been made in the design and construction to do away with the centerboard. The water-tight cockpit deck is located above the water-line, and is fitted with ten self-bailing copper tubes, tin lined. All the available space under the cockpit deck and side seats in the cockpit as well as the space under the floor in the forward end box is filled with air cases, made of clear white pine, covered with canvas, laid in glue and painted several coats.

The material used in the construction of these boats is the best to be had; planking throughout, Port Oxford cedar; frames, clear white oak; fastenings, copper and composition; general interior construction, mahogany. The boats are planked diagonally, two courses of planking being used. Before applying the second course of planking, the first course was covered with canvas one piece, laid in glue, which considering its weight, is the most rigid construction obtainable. These boats are fitted with two masts and three sails, also fitted to take eight oars, and will easily accommodate fifty persons, if the occasion ever requires. Under power the boats show a speed of a little better than 8 knots, which considering the size of the power plant and the heavy construction, is remarkably good.

These boats are designed for patrolling the coast and are assigned to the different Coast Guard stations.

Duesenberg Boat Book

The Duesenberg Motors Corp., of New York City, has published a book of pictures that gives an excellent insight into the advance made in boat construction and design during the last few months. It contains illustrations of some of the really spectacular and successful boats of the season.

In this book are also illustrations of the Duesenberg patrol model marine engines and brief, concise descriptions, with the necessary data as to what each motor will do and what equipment is included with each engine.

This book, designed and written by Rex W. Wadman, is undoubtedly one of the most pretentious catalogues that the marine engine industry has seen in a great many years.

Hilda, a 33-Footer

Hilda is a 33-footer having a beam of 8 feet 8 inches. She is powered with a three-cylinder Frisbie motor developing 19 h.p. having bore and stroke dimensions of 6 x 6 inches. Her rating is 34.87. Hilda has been prominent in the races in Cleveland and vicinity this season and has made a number of winnings. She is owned by E. L. Myer and sails under the flag of the Cleveland Yacht Club.

U. S. life-boat under power with portion of cockpit cover in place. Speed, 8 1/10 knots per hour

Inter-City Racing

Just as inter-city athletics are a success, so may motor boat racing be brought within the same plane. Racing furnishes the only stimulus the motor boat game can boast of.

Nell III, a 29-footer, designed by William H. Hand, Jr., of New Bedford, Mass., for Robert K. Eaton, of Lake Sunapee, N. H., and Boston, Mass.

It is true that last season and this season the industry was greatly fostered by the number of enrolments in patrol service and large numbers of orders booked for chasers, but after the war is over there will be no need for boats of that type.

With the advent of inter-city racing, which received its impetus through Miss Detroit II, Miss Minneapolis, Miss Peoria and various feminine names for fast racing craft based upon the names of cities, the idea has an excellent start. From remarks dropped frequently by boat-builders, etc., it seems that there are a number of yachtsmen throughout the country who would be glad to assist the movement for a challenger to hail from their respective cities. There is a prominent boatman in Atlantic City, who through success in this season's cruiser races, has practically made up his mind to build a Miss Atlantic City.

Motor boat and yacht racing are forms of racing to-day that are totally free from the degrading element, due to the almost superhuman efforts of the American Power Boat Association and the various regatta committee to keep the sport uncontaminated. Possibly the sport has suffered in a financial way, but, since the overthrow of the one attempt to insert fictitious speeds, and the gambling tendency, a real basis for upbuilding the sport has been established.

If motor boat racing is to be a national event, if there is to be any incentive to own the fastest racer in America, or in the world, a get-together meeting is desirable. Let all those interested pool their resources, have races at New York, Boston, Buffalo, Peoria, Minneapolis—make them handicap events, hold them regularly. Let them work out a plan whereby the regattas are self-supporting, thereby furnishing enjoyment, developing the sport, the motors, the boats and also get ready to bring the International Cup back from England.

Motor boatmen shall, by fostering racing, encourage the industry to produce a motor so superior in design that they shall have contributed their share toward the superiority of American products.

Yarrow in Government Service

Yarrow, formerly owned by G. W. Robinson, of Chicago, Ill., is now being used by the government as a patrol boat on Lake Michigan. Its two four-cylinder, 7 x 8½ Anderson engines, which were installed a year ago, have increased its speed considerably and made it more suitable for the patriotic work in which it is now engaged.

New 35-Foot Patrol Boats for Philadelphia Police

In addition to the 60-foot cruiser Muirmaid V, the Red Bank Yacht Works is now completing three patrol boats for the Philadelphia police department. These boats are 35-footers and have fine cabin room. One of these has been delivered and is in operation now and the remaining two will be delivered in about thirty days.

On order for delivery next spring are four 32-foot mahogany high-speed runabouts designed by J. L. Hacker, of Detroit, Mich. Three of these will be equipped with Wisconsin 175 h.p. engines and one with a 225 Sterling racing engine. This latter boat will be exhibited at the show.

The Red Bank Yacht Works has a completely equipped plant fitted with all the necessary machinery including two marine railways, both operated by power. Their superintendent is Capt. Edward V. Willis, who for many years was with Herreshofs and who, it will be remembered, sailed the Vanitie.

Duesenberg Now Occupying New Plant

The various organizations of the Duesenberg Motors Corporation, located in Lansing, Mich., Edgewater, N. J., and Chicago, Ill., have all been moved to the big new plant at Elizabeth, N. J., and all their marine, automobile and aviation motors will be manufactured at this plant.

The Duesenberg Motors Corporation extends a cordial invitation to the readers of MoToR BoatinG to view the new plant and see for themselves how exceedingly modern and efficient this factory and equipment are.

A 2 H.P. Motor Weighing Less Than 50 Pounds

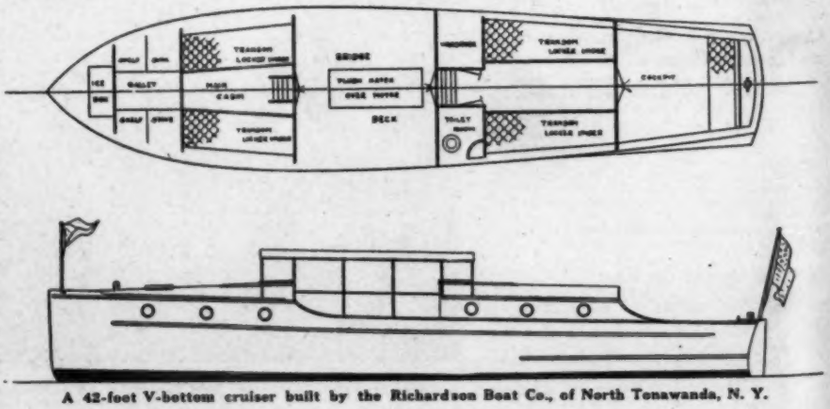
Joymotor begins a new era in outboard motors by reducing the weight of a 2 h.p. motor to a shade less than fifty pounds. This means a nice saving in weight which is greatly appreciated by users of such motors as adding to their portability and making a better balance for the rowboat or canoe on which this type of motor is used.

In addition to this feature Joymotor is equipped with a reversing propeller which operates by a geared connection from the tiller enabling the stopping and backing of the boat within a few feet, or the manipulating in any position with control at all angles without stopping the engine or interfering with its action. This reversing propeller is a feature which is appreciated by fishermen and hunters, as it enables the manipulating of the boat in narrow inlets and the making of landings with ease.

Another new feature of Joymotor is the under-water exhaust. This device makes a quiet-running motor, doing away with the sharpness of the report and yet, it is said, actually increases the power of the motor instead of detracting from it.

The power of the motor is another good point, as it is claimed that the motor runs over 1,000 r.p.m. and develops more power than many other motors of this size and rating.

The Joymotor Mfg. Co., of Chicago, Ill., feel that the 1917-18 model Joymotor is one of the sturdiest motors of this type and best calculated to stand up and give satisfaction under all conditions.



A 42-foot V-bottom cruiser built by the Richardson Boat Co., of North Tonawanda, N. Y.

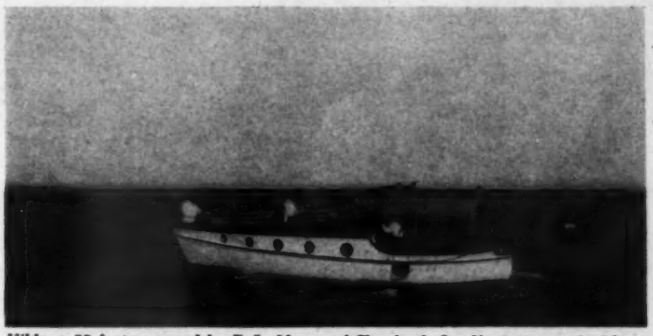
High Go, a 30-foot runabout built by the Camden Anchor-Rockland Machine Company from designs by John Alden, and suggestions of John Bird, of the Camden Company, and C. L. Homer, has a speed of 18 m.p.h.

Nell III, a 26-Foot Runabout

Often on Lake Sunapee, N. H., Nell III may be seen, her bow high out of water, tearing across the lake at top speed driven by Mrs. Eaton or Robert K. Eaton, president of the John Hancock Life Insurance Company.

The boat is 26 x 6½ feet, of V-bottom type, and was designed by William H. Hand, Jr., of New Bedford, Mass., built of mahogany and powered with a Model F, 100 h.p. four-cylinder Sterling motor. Her top speed is 28½ miles, but she is capable of continuous running at 23 miles. For extreme speed her motor turns a Columbian Architect's 19x26-inch propeller at 1,400 r.p.m. and she is capable of keeping it up for long runs.

Craft like Nell III will probably replace many cruisers that have gone into government service this season, as runabouts are not of a type required for patrol service. Runabouts of this class in the past few years have been developing rapidly and have initiated the lover of water sports to new sensations, it being a frequent assertion that the speed of a runabout, travelling around 30 m.p.h. seems equivalent to automobile speed of a mile a minute, in addition to which there are no bumps, tire trouble or dirt. Engine and boat builders report a tendency on the part of recent owners of cruisers now in patrol service to order runabouts so that they may remain in touch with water sports, which goes to prove that once a boat owner, always a boat owner.



Hilda, a 33-footer, owned by E. L. Myers, of Cleveland, O. She is powered with a Frisbie three-cylinder motor and has a rating of 34.67

Fontinalis, a 68-footer with a reduction gear installation, was designed by George Owen, of Cambridge, Mass., and built by Hodgdon Brothers, of East Boothbay, Me.

Adding Another to His Fleet of Sight-Seeing Boats

Captain George H. Dorr has given orders to Captain L. C. Holmes of the Florida Boat Works, of Palm Beach, Fla., for another double decker, a 50 x 14-footer. This new boat will be larger than Captain Dorr's other boats, the Tourist, 50 x 12-foot semi-tunnel, powered with a 40-50 h.p. Peerless engine and the La Rochelle III, 40 x 10 feet, powered with a 35 h.p. Sterling. The new boat will be ready by December 15, in time for the winter season.

Captain Dorr has been operating sight-seeing boats at Palm Beach, Fla., for ten years, making trips South to Miami and North to St. Augustine.

Mrs. Dorr operates her own boat, La Rochelle III, a 40-foot double decker, taking out on trips seventy-five passengers, and has her government license. She knows the waters well, though it is something of a trick down at Palm Beach on account of the many shoals, oyster bars and snags.

Mrs. Dorr starts and stops the motor at will, casts lines and makes fast, in fact does anything that a man can do, even to taking out and cleaning a plug of water connection, and if the engine doesn't fire right, she goes at it until it does.

International Standards on Airplane Materials

Preliminary specifications for international standards of airplane materials are being issued by the International Airplane Standardization Board in Washing on.

This work has been in charge of F. G. Diffin, and copies of the standards adopted may be obtained by manufacturers interested by application to the International Standards Board, Room 224 Bond Bldg., Washington, D. C.

All international standards on airplane materials and fabricated parts in the future will be issued from this office and can be had on application.

Ann Ella

Ann Ella is a new boat this season, of the cruiser-houseboat type, with a strikingly beautiful interior. She is 65 feet long by 12 feet beam and 3 feet draft, designed and built by the Racine Boat Co., of Racine, Wis., and was completed late this season for a Great Lakes yachtsman. The construction is heavy, since longevity instead of speed was desired.

The keel, stem, and stern are of sound white oak; the ribs are of straight-grained white oak 2¼ x 1¼ inches steam bent. Each set of frames are fitted with a 1¼ x 5-inch oak floor timber, which is riveted to the frames and through the keel. The planking is 1½-inch cypress, all copper riveted to the frames. The deck frames and clamps are of clear straight-grained heart stock yellow pine, well riveted together.

The cabin is built of Port Oxford cedar and mahogany with a large saloon forward which was furnished by the owner after receiving the boat. Aft of this saloon there are two staterooms with upper and lower berths, each stateroom having lavatories installed. The galley is in the after end of the cabin on the port side, and is fully equipped with dish rack, shelves, stove space, and lockers. A large ice-box is built in the after end of the galley with an entrance to the provision chamber from the galley, and it is arranged with a door on the outside so that the ice-box can be filled with ice from the after deck. The toilet room is located in the galley on the port side and equipped with closet and lavatory, also locker space.

The boat is fully equipped with all fittings required, including electric lights, enunciator with push button at all stations. The forward deck is very roomy and has an awning for protection from the sun. The after deck is also equipped with an awning.

The crew's quarters and engine-room are below the deck. The crew's quarters are equipped with two berths, toilet, lavatory and locker space. The engine-room is fully equipped with lockers, work bench and vise. There is a small trunk cabin arranged over this compartment, giving full headroom for the engineer.

The engine is a Model FH, eight-cylinder Sterling, and drives the boat at a speed of 12½ m.p.h., which is excellent speed for a boat of this size. The gasoline tanks are of 400 gallon capacity, and are distributed below the deck.

Ann Ella has sleeping accommodations for eight persons, with additional berths for a crew of three. There are two double staterooms, while the main saloon has two large built-in davenports which may be made up into full size beds.

(Continued on page 52)

Personalities

Getting into the boating game 'way back in 1900, when he should have been engaged in absorbing knowledge from too statistical books, twelve-year old M. E. Mutchler used to crouch behind a geographical salient and whittle out various sailing craft. The chips were craftily smuggled out 'neath a draw-string blouse. Real silk and linen sails that would actually draw up and down, lead keels on fast

M. E. Mutchler

racing sloops, were features of the products. And they really sailed,—in a creek back of the house.

The vicissitudes of fortune lead to successive journeys and residences in Pennsylvania, New Jersey, New York, Ohio and New York again. When they reached Ohio, he built a flat scow 14 x 4. Whatever it lacked in planking was made up for in caulking, which in places was 1-inch thick. Came the first motor boat to their town, a one-lung cougher, then fleets of white cruisers stopped a-provisioning and there was an intense longing to own one of them, or at least to be associated with one. Then the family moved to Buffalo, where, during a rather varied career (he was employed as insurance clerk, shipping clerk in an engraving house, claim clerk for the Pennsylvania Railroad (four years), specification clerk at the Pierce Arrow Motor Car Co., etc.), he never lost sight of motor boating and, as his earning capacity increased, even went so far as to absorb bales of catalogues evenings by the fireside.

At this juncture he made forcible personal application to the Sterling Engine Co., of Buffalo, N. Y., when that company was one-fifth its present size. Originally assistant purchasing agent, and finally advertising and traffic manager, marks the progress with this company in five years. He has had the usual bumps, maybe more, all along the route, and there are a lot of troubles an advertising manager has to put up with.

Mr. Mutchler left the Sterling and went to New York at the time of the outbreak of the war, when times were hard. As it was practically impossible to secure work in New York at that time, he returned to Buffalo, seemingly at a very opportune time, as he was again offered a position with the Sterling, as assistant purchasing agent; and since that time he has also become traffic manager, and later, retaining that position, became advertising manager.

As Mr. Mutchler has always had a liking for boats and has been an ardent canoeist for over eight years, he has kept in touch with the game —and hopes to remain in it for at least many years to come.

Miss Toledo, one of the latest patrol boats, now in government service, fitted with a hot-water heating plant. A radiator is installed in each compartment

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Photo by M. Rosenfeld, N. Y.

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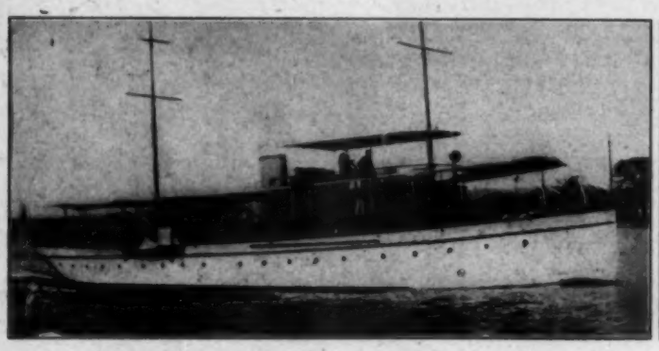
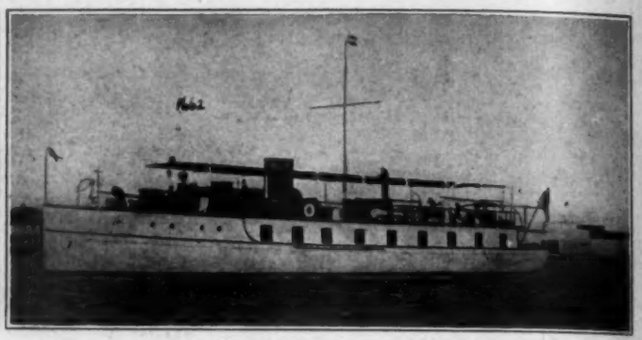
We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request.

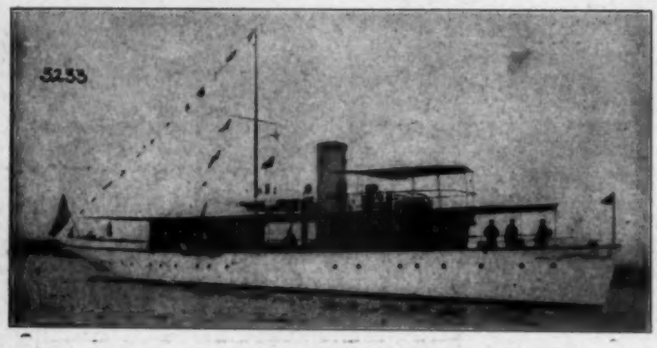
WINTER CHARTER—We specially offer several modern GASOLINE HOUSEBOATS particularly adapted for FLORIDA waters. The demand last season greatly exceeded amount of available craft; these conditions will doubtless prevail next Winter, therefore early arrangements are advised.



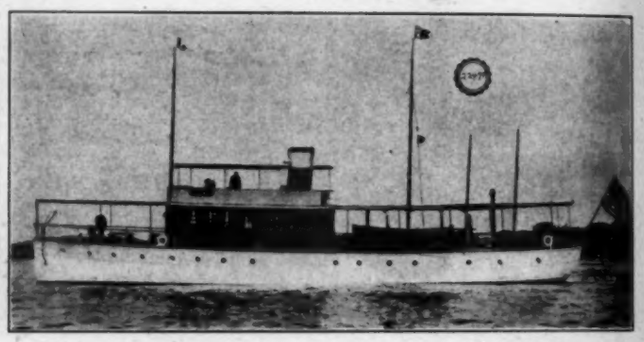
No. 1796—For Sale or Charter—Very roomy, twin screw cruising power yacht, 99 x 17 x 4 ft., adapted for Florida service. Speed 12-14 miles; Standard motors. Large dining saloon, six staterooms, three bathrooms; all conveniences. Cox & Stevens, 15 William Street, New York.



No. 1662—For Charter—Attractive 90 ft. twin screw gasoline houseboat; speed 10-12 miles. Large saloon, four staterooms, two bathrooms; all conveniences. Handsomely furnished. Cox & Stevens, 15 William Street, New York.

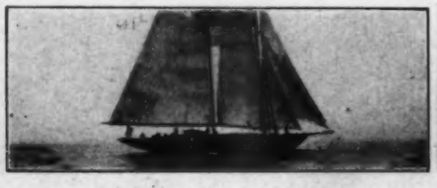


No. 3233—For Sale or Charter—Particularly desirable 123 ft. steel yacht. Speed up to 17 miles. Recent build. Dining saloon and social hall on deck; five staterooms, two bathrooms; etc. Cox & Stevens, 15 William Street, New York.



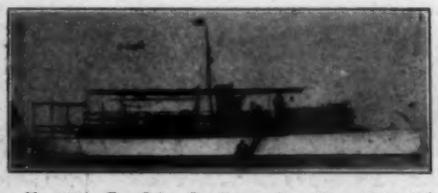
No. 2247—For Sale or Charter—90 ft. twin screw power yacht. Speed 12-14 miles. Dining saloon on deck; main saloon, three staterooms, two bathrooms, etc. Particularly able craft. Cox & Stevens, 15 William Street, New York.

No. 3462—For Sale—Especially desirable 83 ft. power yacht; adapted for Florida waters. Excellent seaboat. Speed 12-14 miles. Good accommodation. Attractive figure accepted on account death in owner's family. Cox & Stevens, 15 William Street, New York.



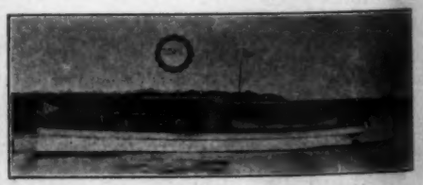
No. 647—For Sale—Modern, flush deck, light draught, auxiliary schooner yacht, 106 x 75 x 24.6 x 5.6 ft. Speed under power 9 knots. Large saloon, three staterooms, two bathrooms, electric lights, hot water heating plant, etc. Cox & Stevens, 15 William Street, New York.

No. 414—For Sale or Charter—Steel gasoline houseboat; 62 x 14 x 2 ft. Speed 8 miles; 6 cyl. Sterling motor. Large saloon, five staterooms, bath, etc. Low figure. Cox & Stevens, 15 William Street, New York.

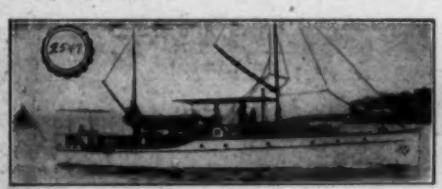


No. 1130—For Sale—Gasoline cruiser, 70 x 13.6 x 3.6 ft. Speed 11-13 miles; 6 cyl. Winton motor. Dining saloon, three staterooms, bath, main saloon, etc. In commission. Low figure accepted. Cox & Stevens, 15 William Street, New York.

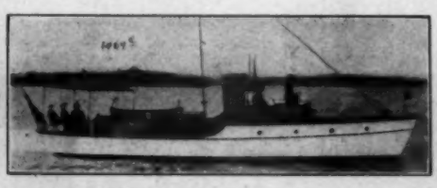
No. 3156—For Charter—Modern, Twin screw gasoline houseboat; 75 ft. x 16.9 x 2.3 ft. Speed 10-12 miles. Large deck saloon, four staterooms, dining saloon, bath, two toilets; all conveniences. Reasonable figure. Cox & Stevens, 15 William Street, New York.



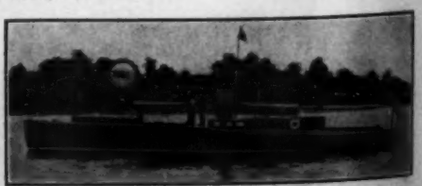
No. 2508—For Sale—Smart, fast 65 ft. power boat. Speed up to 16 miles; 100 H.P. 6 cyl. Standard motor. Dining saloon forward; double stateroom, toilet, etc., aft. Large after deck. Low price. Cox & Stevens, 15 William Street, New York.



No. 2547—For Sale or Charter—Handsome, up-to-date gasoline cruiser, 64 x 12.6 x 4 ft. Speed 11½ miles; 60 H.P., 6-cylinder, heavy-duty motor, controlled from bridge. Dining saloon, toilet and separate galley forward; engine room amidships; double and single stateroom and bathroom aft. Cox & Stevens, 15 William Street, New York.



No. 1469—For Sale—Modern bridge deck cruiser; 52 x 11 x 4 ft. draught; 25/35 H.P. Standard Motor; speed 11 miles. Double stateroom, saloon, galley, toilet room, etc. Interior finish African mahogany throughout. Bargain for quick sale. Cox & Stevens, 15 William Street, New York.



No. 3461—For Sale—Twin screw express cruiser; 65 x 9 x 3.3 ft. Speed 25 miles; two 6 cyl. Van Blerck motors (new 1917). Stateroom and saloon accommodation four in owner's party. Best construction. Cox & Stevens, 15 William Street, New York.

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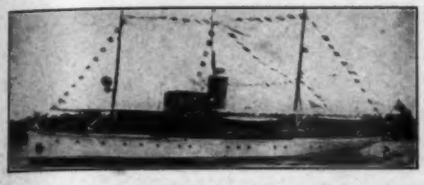
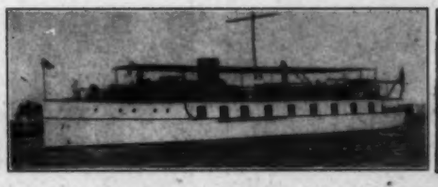
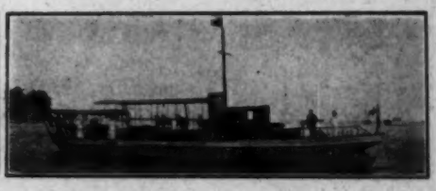
We are pleased to offer below an exceptionally fine list of first class yachts of every size and type, some of which are available at bargain prices. Full particulars will be mailed immediately upon request. We also have for Winter charter a number of desirable gasolene house boats now in Florida waters and we would suggest early selection. Our handsome Illustrated Yacht List mailed free.



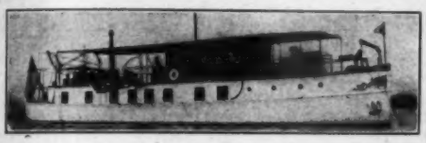
7920—Unusually able 95 ft. Gasolene Cruiser. All conveniences—hot water heat. In commission. Immediate delivery. Stanley M. Seaman, 220 Broadway, New York.



8727—For Charter—90 ft. Twin Screw ideal shoal draft cruiser. 4 elegant staterooms; bath; all modern conveniences—hot water heat. Speed 12 miles. In commission, immediate delivery. Stanley M. Seaman, 220 Broadway, New York.

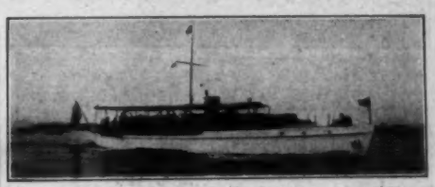


8725—Shoal draught 83-foot Coast Cruiser. Fine accommodations. Ideal for Florida waters. Stanley M. Seaman, 220 Broadway, New York City.



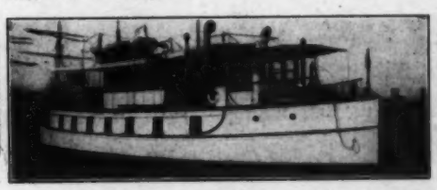
8401—For Sale—75 ft. Mathis Cruiser, good as new. 4 staterooms; two Standard motors; speed 10 knots. All conveniences. Ideal for Florida. Stanley M. Seaman, 220 Broadway, New York.

8786—This exceptionally high grade 72-foot Twin Screw Cruiser offered at attractive price. In commission Southern waters. Speed 13 miles. Stanley M. Seaman, 220 Broadway, New York City.

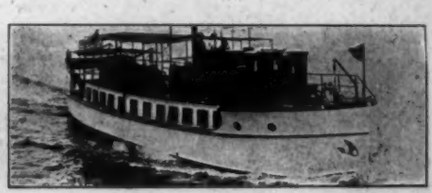


8747—Here is opportunity to purchase at sacrifice Twin Screw 70-foot Coast Cruiser. 2 staterooms. Bath. Speed 11 miles. Stanley M. Seaman, 220 Broadway, New York City.

8757—Lawley 69-foot Twin Screw Shoal Draught Cruiser. 2 double staterooms. Has cruised entire Atlantic Coast. Stanley M. Seaman, 220 Broadway, New York City.



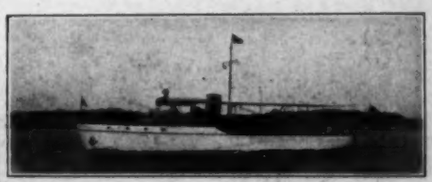
8613—For Sale or Charter—68 ft. Twin Screw Coast Cruiser; 20 ft. beam, 2.10 ft. draft—cruise anywhere in Florida. 2 double staterooms; shower bath; hot water heat. Standard motors; speed 9 knots. The finest craft of type offered. Stanley M. Seaman, 220 Broadway, New York.



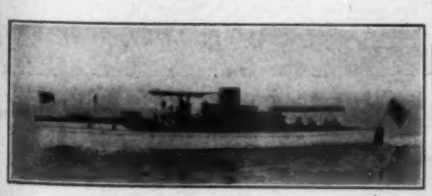
8362—For Sale or Charter—62 ft. Cruiser. 2 double staterooms; bath. Now in Florida. Stanley M. Seaman, 220 Broadway, New York.

8787—62-foot Shoal Draught Coast Cruiser. Exceptionally heavy construction. Handsome interior. Speed 11 miles. Bargain. Stanley M. Seaman, 220 Broadway, New York City.

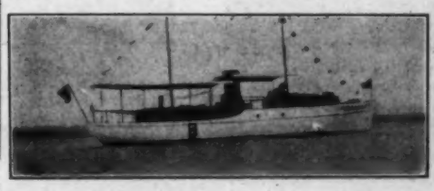
8767—The handsomest 60-foot Twin Screw Express Cruiser available. Built 1917. Speed 24 miles. Stanley M. Seaman, 220 Broadway, New York City.



8771—60-foot Coast Cruiser. 2 staterooms. Bath. New engine. Low price. Stanley M. Seaman, 220 Broadway, New York City.



8779—60-foot Twin Screw Express Cruiser offered at bargain. New engines. Speed 20 knots. Stanley M. Seaman, 220 Broadway, New York City.



8765—Handsome 55-foot Coast Cruiser. 2 staterooms. Standard motor. In commission. Stanley M. Seaman, 220 Broadway, New York City.

8646—One of the ablest 55 footers available. Cruised Atlantic coast extensively. Low price. Stanley M. Seaman, 220 Broadway, New York.

8752—The only 50-foot cruiser of type available. Stateroom and saloon. Speed 11 miles. Low price. Stanley M. Seaman, 220 Broadway, New York City.

8777—This 45-foot Elco Cruiser is offered at the lowest price of any similar boat available. Built 1915. Good as new. Stanley M. Seaman, 220 Broadway, New York.

8510—New 30 ft. Seagoing Cruiser. 9 ft. beam. 15 h.p. Sterling engine. Fine accommodations. Unusually complete. In commission. Stanley M. Seaman, 220 Broadway, New York.

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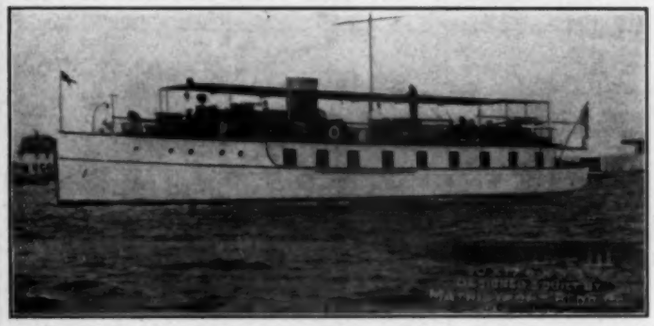
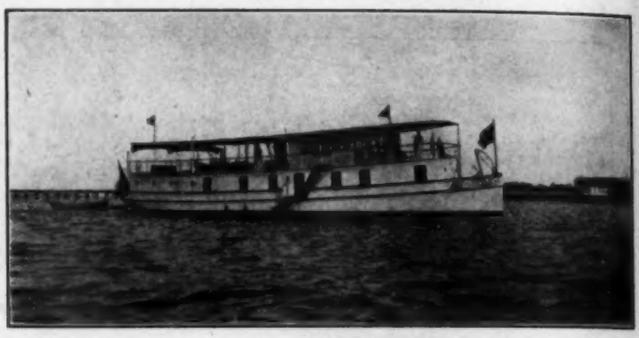
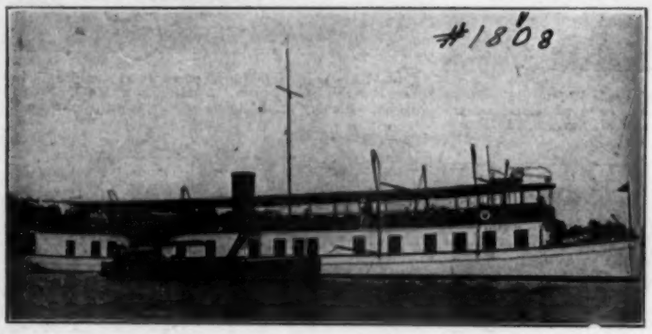
Offer for charter the following desirable houseboats all of which are admirably suited for Florida waters



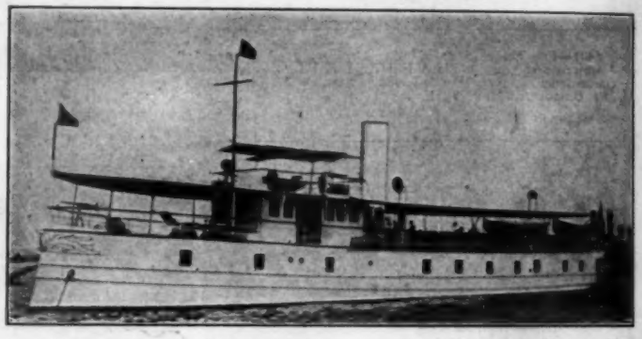
No. 1865—Exceptional opportunity to charter one of the best houseboats available. 90 ft. over all, 17 ft. 6 in. beam and 3 ft. 6 in. draft. 3 staterooms, maid's room, 2 bathrooms and dining saloon.



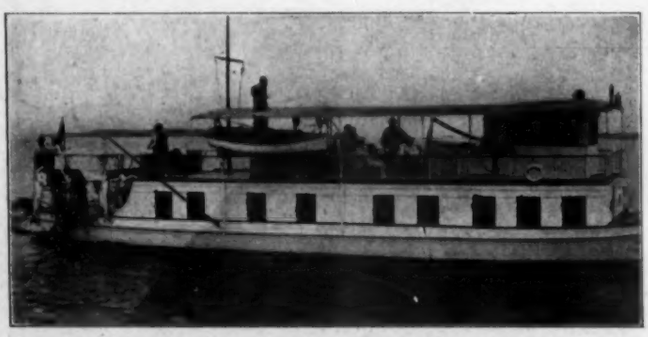
No. 1820—Charter—Desirable houseboat in southern waters, 103 ft. x 20 ft. 4 in. x 3 ft. draft. 4 staterooms, 2 bathrooms, dining saloon and large sitting room.



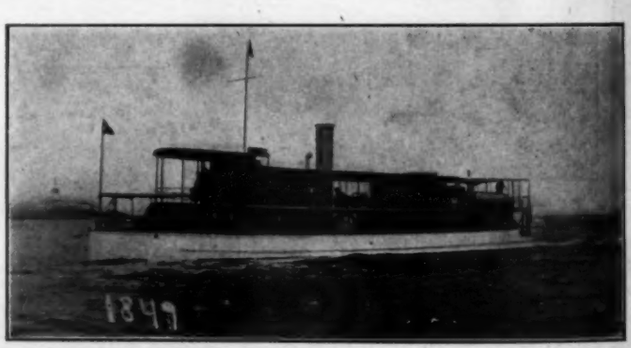
No. 1868—Sale—Charter—Now at Miami. Admirably suited for Florida waters. 125 ft. x 17 ft. 8 in. x 3 ft. 4 in. draft. 4 staterooms, 2 bathrooms, very large dining saloon, ice machine, etc.



No. 243—Sale—Charter—Twin screw steam houseboat, 116 ft. x 21 ft. x 4 ft. draft. 4 staterooms, 3 bathrooms, dining saloon and smoking room.

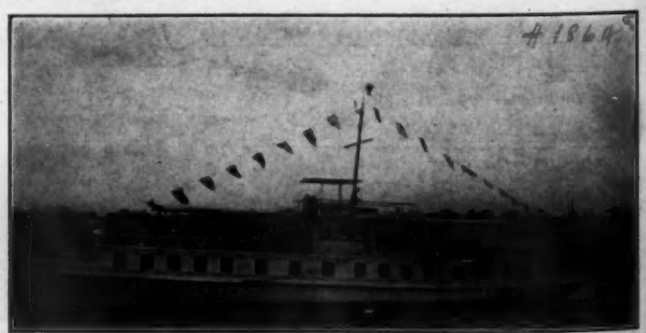


No. 1860—Charter—Shallow draft twin screw houseboat, 70 ft. x 18 ft. 6 in x 18 in. draft. 3 staterooms, bathroom, dining saloon and pilot house.



No. 1849—Charter—Desirable houseboat, 115 ft. x 17 ft. x 3 ft. 6 in. draft. Speed 12 miles. 5 staterooms, 3 bathrooms, main saloon, dining saloon, smoking and sitting rooms.

No. 1847—For Charter—Houseboat now in Florida waters, 85 ft. x 18 ft. x 28 in. draft. 4 staterooms, bathroom, large dining saloon, sitting room, etc.



No. 1864—Charter—Now in Florida waters. Modern houseboat, 110 ft. x 20 ft. x 4 ft. 9 in. draft. 4 Staterooms, dining saloon, sitting room, etc.

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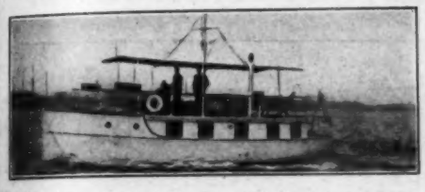
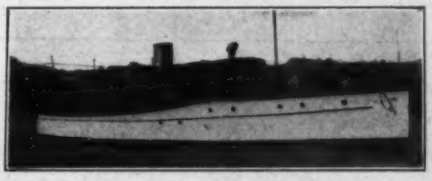
We have a most complete and up-to-date list of steam yachts, power yachts of all sizes, sail, auxiliary and houseboats on file in our office, kept constantly up-to-date by a thorough and comprehensive canvass of the entire yachting field from time to time. We are in a position to submit full information on any type of boat upon request.
FOR SOUTHERN CRUISING this Winter we offer a number of very desirable POWER HOUSE BOATS and POWER YACHTS which are specially adapted for FLORIDA waters. Last season a great number of clients were much disappointed in not being able to secure for charter a suitable POWER HOUSE BOAT or POWER YACHT owing to the great demand. Yachting this coming WINTER SEASON promises more activity than ever before—so—CHARTER A BOAT NOW AND BE ASSURED OF ONE THIS WINTER.
We can render invaluable assistance in expert appraisals, supervision of alterations and estimates.



No. 5657—FOR SALE—Fine little houseboat, 43 feet. One man control. Standard motor. Double stateroom and cabin. Bargain. Gielow & Orr, 52 Broadway, New York City.



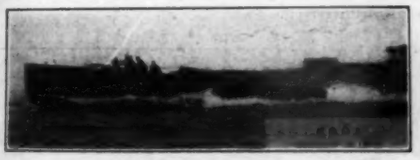
No. 5489—FOR SALE and CHARTER—Handsome 72-foot twin screw express cruiser. Two double staterooms, bathroom, dining saloon on deck. Speedway motors. Exceptional boat for Florida waters. Gielow & Orr, 52 Broadway, New York City.

No. 6020—FOR SALE—72-foot English type houseboat. No power. One of the handsomest of its type. Beautifully fitted and furnished. This remarkable craft furnishes the maximum possible comfort. Gielow & Orr, 52 Broadway, New York City.

No. 1887—FOR SALE—62-foot scow houseboat. Sterling motor, new 1916. Five double staterooms, bathroom, main cabin. Gielow & Orr, 52 Broadway, New York City.

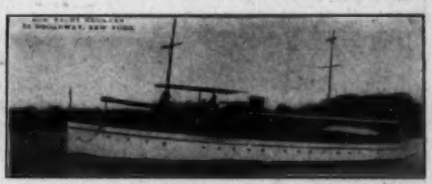
No. 946—FOR SALE and CHARTER—70-foot, roomy and comfortable twin screw power houseboat. Attractively furnished. Four double staterooms, main cabin. Gielow & Orr, 52 Broadway, New York City.

No. 858—FOR SALE and CHARTER—Roomy and comfortable twin screw 125-foot power houseboat. Now in Florida waters. Five staterooms, two bathrooms, main cabin and deckhouse. Gielow & Orr, 52 Broadway, New York City.

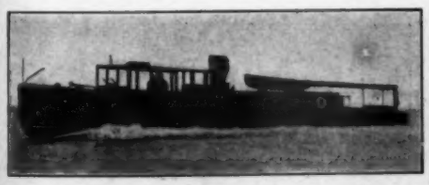


No. 5961—FOR SALE—For Florida waters we suggest this 48-foot twin screw express cruiser. Built in 1915. Van Blerck motors, excellent condition. Gielow & Orr, 52 Broadway, New York City.

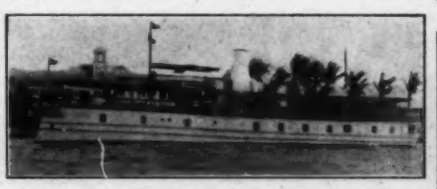
No. 4368—FOR SALE—One of the few large motor yachts available; 110-foot triple screw; steel hull. Six staterooms, 2 bathrooms, dining and main cabin. Sterling motors. Excellent boat for Florida waters. Gielow & Orr, 52 Broadway, New York City.



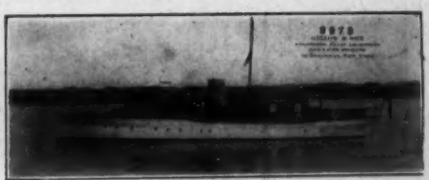
No. 3710—FOR SALE and CHARTER—Popular boat for Florida service. 99-foot twin screw power yacht. Standard motors. Six staterooms, three bathrooms. Deckhouse contains dining saloon. Gielow & Orr, 52 Broadway, New York City.



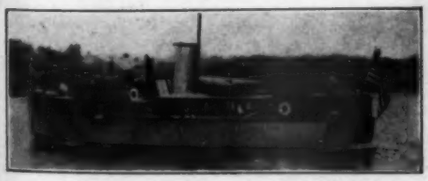
No. 5964—FOR SALE—Handsome and attractive 60-foot twin screw motor yacht. Speed up to 24 miles. Built in 1917. Sterling motors. Gielow & Orr, 52 Broadway, New York City.



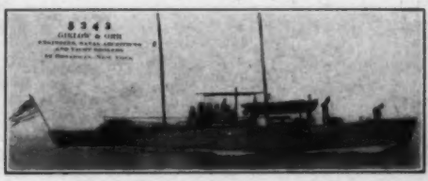
No. 1234—FOR SALE and CHARTER—Twin screw 116-foot houseboat. Four staterooms, four bathrooms, main cabin and deckhouse. Gielow & Orr, 52 Broadway, New York City.



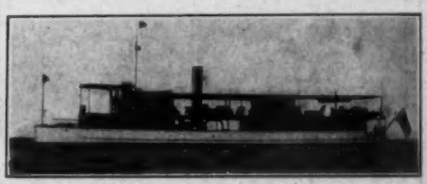
No. 3973—FOR SALE—82-foot twin screw, light draft motor yacht. Sterling motors. Two double staterooms, bathroom, main cabin and deck dining saloon. Ideal for cruising in Florida. Gielow & Orr, 52 Broadway, New York City.



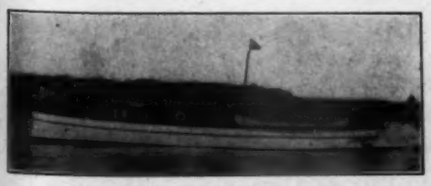
No. 5980—FOR SALE and CHARTER—For Florida waters; 60-foot raised deck motor yacht. New 1917. Sterling motor. Speed up to 15 miles. Gielow & Orr, 52 Broadway, New York City.



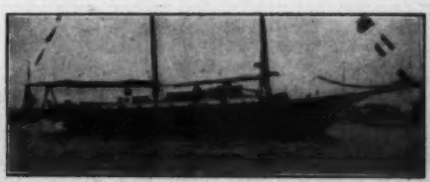
No. 5242—FOR SALE—83-foot twin screw Lawley built motor yacht. In fine condition. Gielow & Orr, 52 Broadway, New York City.



No. 2329—FOR SALE and CHARTER—Twin screw houseboat, 115 feet. Five staterooms, three bathrooms, two deckhouses. Gielow & Orr, 52 Broadway, New York City.



No. 5413—FOR SALE—65-foot unique cruiser, suitable for Florida. Standard motor. Double stateroom, deck house dining room. Gielow & Orr, 52 Broadway, New York City.



No. 4295—FOR SALE and CHARTER—Auxiliary centerboard schooner, shallow draft, 58 ft. x 46 ft. x 18 ft. 4 ft. draft. Excellent boat for use in Florida waters this Winter. Two double staterooms, bathroom, main cabin. Gielow & Orr, 52 Broadway, New York City.

No. 5403—FOR SALE and CHARTER—51-foot power houseboat. Standard motor. Four staterooms, main cabin. Gielow & Orr, 52 Broadway, New York City.

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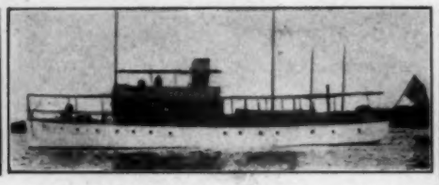
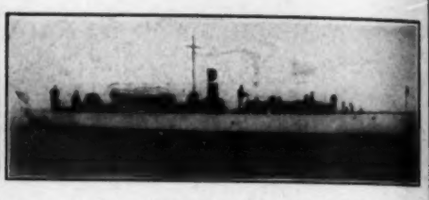
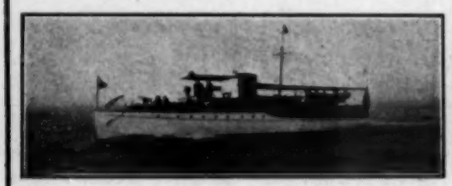
No. 924—Power Yacht, 92 ft., 100/125 H.P. 20th Century motor, splendid deck space.



No. 1821—Flush Deck, Power Yacht 90 x 15.3, two 60 H.P. motors, 3 staterooms, etc.

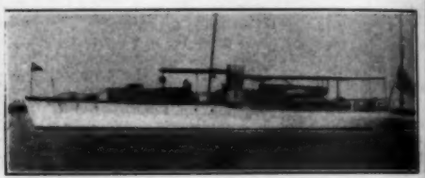


No. 948—Power Yacht, 91 x 12.6, two 125 H.P. motors. Low price if placed in Government Service.

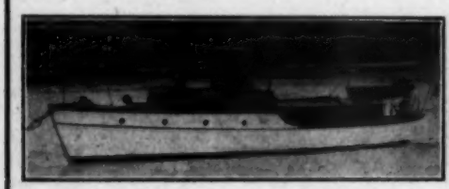


No. 1738—Raised Deck Cruiser, 65 x 11, six cylinder motor, good accommodation.

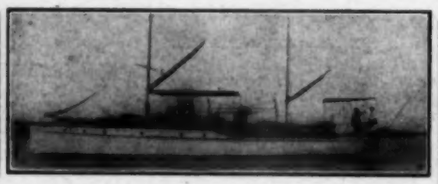
No. 1585—Power Yacht, 91 x 15.7, staunch construction, flush deck, two 6-cylinder motors, good speed.



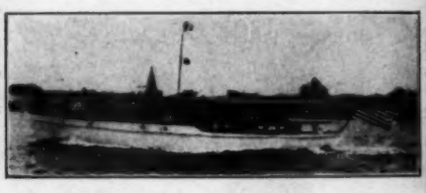
No. 1719—Modern cruiser, 66 x 13.4, Standard motor, 50 H.P.; everything first class condition.



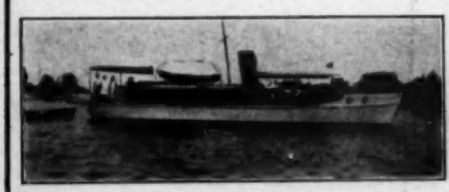
No. 1700—Bridge Deck Cruiser, 52 x 11, Standard motor, with deck controls.



No. 1959—Exceptionally able seaboat, 64 ft., two staterooms, bath, etc., in commission.

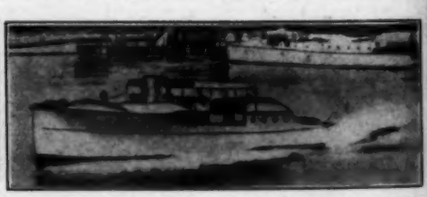


No. 1629—Sale—Charter. Splendid cruiser, 60 x 11.6, Murray & Tregurtha kerosene motor, A-1 condition.

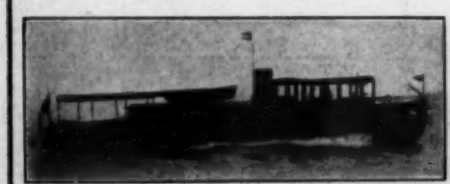


No. 1248—Bridge Deck Cruiser, 51 x 10.9 x 3; 4 cylinder Standard motor.

No. 1919—Attractive Power Cruiser, 60 x 12.6, fifty H.P. motor.

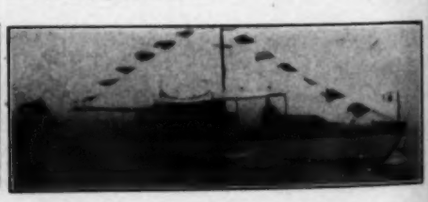


No. 2314—Express Cruiser, 50 x 11.3, Van Blerck 200 H.P. motor, speed 22 miles.



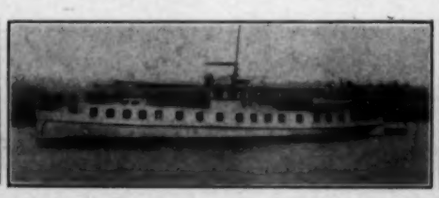
No. 2343—Sale—Practically new, twin screw 60 ft. express cruiser, Sterling engines, speed 22 miles.

No. 1370—First-class Cruiser, 55 x 11, six cylinder Standard. Speed 12 miles.

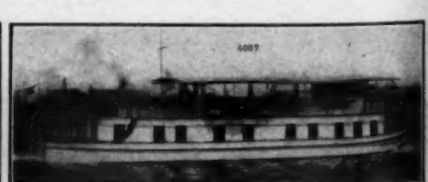


No. 2308—Elco Express Cruiser, 54 x 9, Standard motor 60 H.P., Speed 15 miles.

No. 1791—Matthews Built Cruiser 43 x 10, Standard motor, speed 10/11 miles.



No. 39—Charter; Florida waters, Power Houseboat 110 x 20, two 75 H.P. Murray & Tregurtha motors.



No. 32—For Charter—Florida; twin screw 70 ft. Houseboat; Sterling motors, 3 staterooms.

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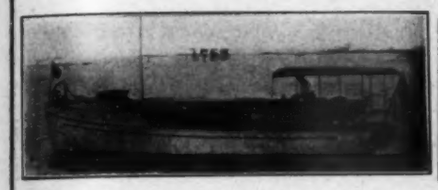
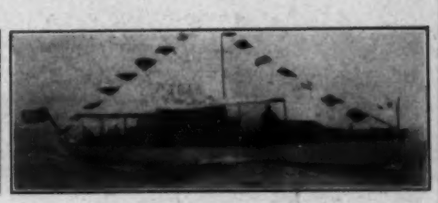
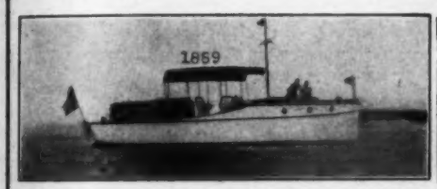


1753—40 foot cruiser. Stateroom and cabin sleep 4 people. Speed 10-12 miles.

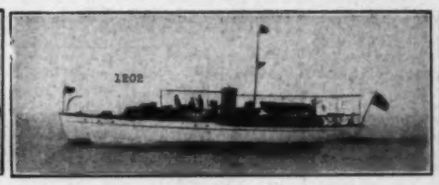
1885—40 foot express cruiser. Cabin sleeps four. Speed 20 miles.



1846—54 foot Elco express day cruiser. Ideal for Florida waters. Price attractive.

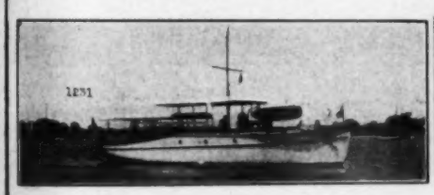


1889—40 foot cruiser. Stateroom and cabin sleep 5 or 6 people. $1,600 will buy for quick sale.



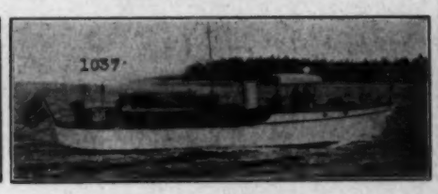
1202—65 foot cruiser. Two double staterooms, saloon, bath, etc.

3915—55 foot auxiliary yawl. Stateroom and saloon sleep 5 to 6 people. Price attractive.

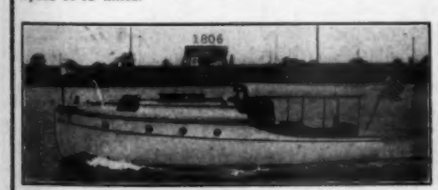


1231—55 foot cruiser. Two staterooms, saloon, etc. Speed 11-12 miles.

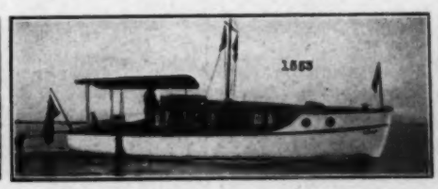
1890—55 foot express cruiser. Stateroom, saloon, etc. Speed 25 miles.



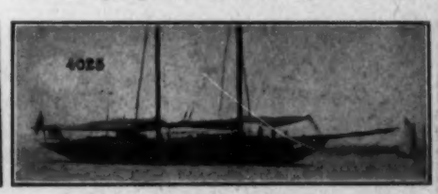
1037—57 foot cruiser. Two staterooms, main cabin, etc. New Sterling Engine installed 1917. Speed 12-14 miles.



1806—30 foot cruiser. Two berths in cabin; Sterling Motor. Speed 12 miles.

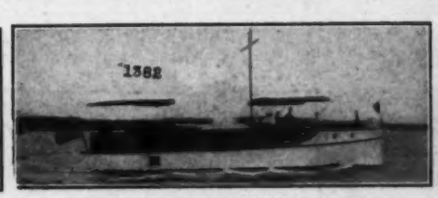


1553—32 foot cruiser. Sleeps 3. 15-20 H.P. Bridgeport motor. Speed 8 miles. Electric light. Price $750.



4025—106 foot auxiliary schooner, 5 ft. 6 in. draft. Four staterooms, large saloon, two bathrooms, etc. Speed 9 knots under power.

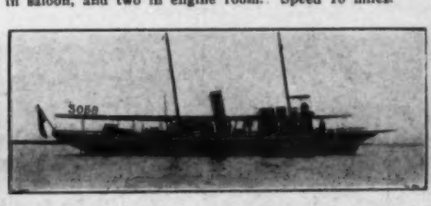
1784—62 foot houseboat. Two staterooms, saloon, bath, etc. Now in Florida.



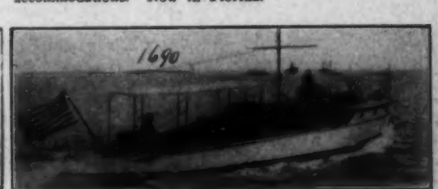
1382—43 foot cruiser. Stateroom. Two double berths in saloon, and two in engine room. Speed 10 miles.

4157—Twin screw 70 foot power houseboat. Splendid accommodations. Now in Florida.

3706—Sale or Charter—Twin screw 104 foot power houseboat. Four large staterooms, dining saloon, social hall, baths, etc.



3058—100 foot steam yacht. Two staterooms, main saloon, dining saloon, etc. Price attractive.



1690—43 foot cruiser. Stateroom and saloon sleep four. Speed 12-14 miles. Located in Florida. Price attractive.

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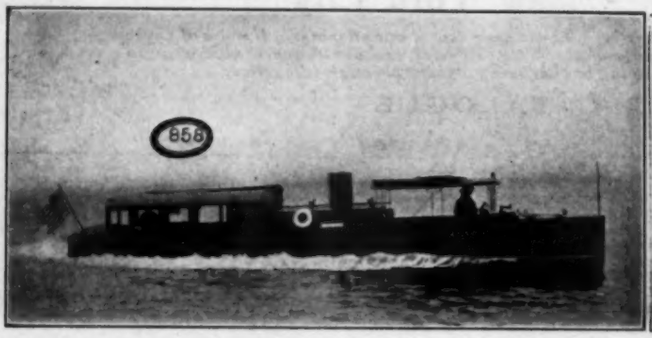
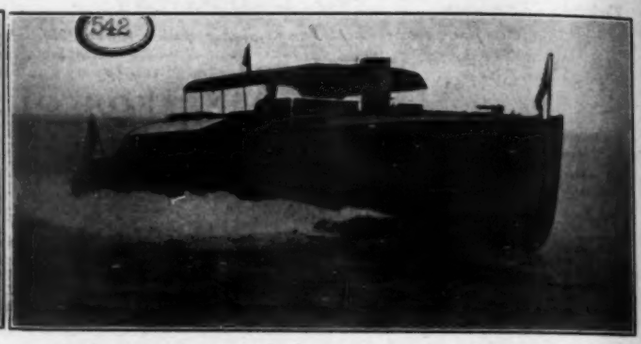
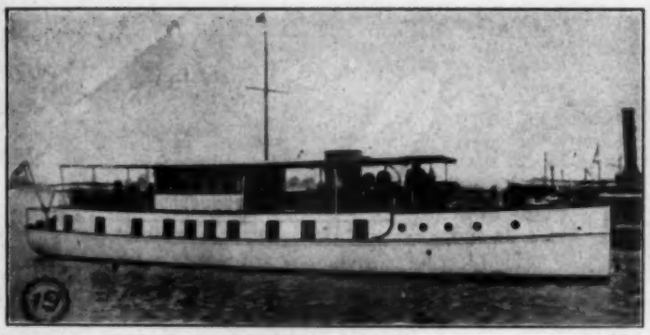


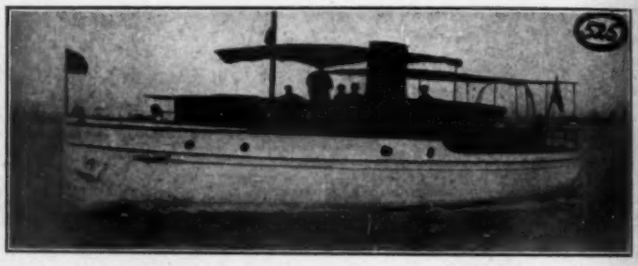
No. 858—For Sale—Fast express boat 45 ft. x 8 ft. x 32 in. Built 1917. Speed 18-22 miles. Van Blerck motor. Splendid boat for Florida.



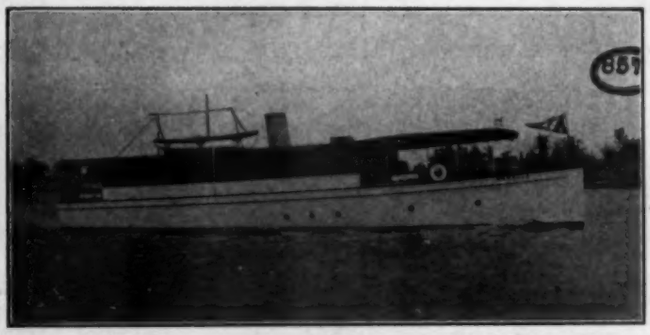
No. 542—For Sale—40 ft. fast express cruiser. 8 cyl. Van Blerck motor. Speed 17-20 miles. Built in 1916.



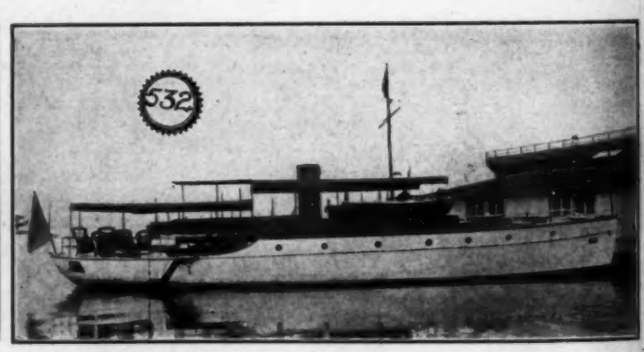
No. 19—For Charter—Desirable 95-ft. power houseboat. Social hall on deck Four double staterooms. Modern appointments.



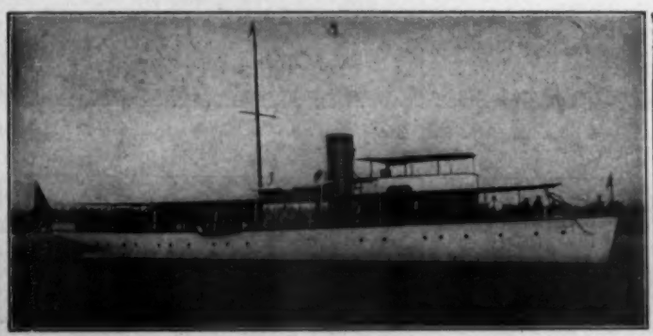
No. 525—For Sale—60 ft. x 15 ft. power boat. Two Sterling motors. Speed 11 miles. Large accommodations. Located on Lakes. Price attractive.



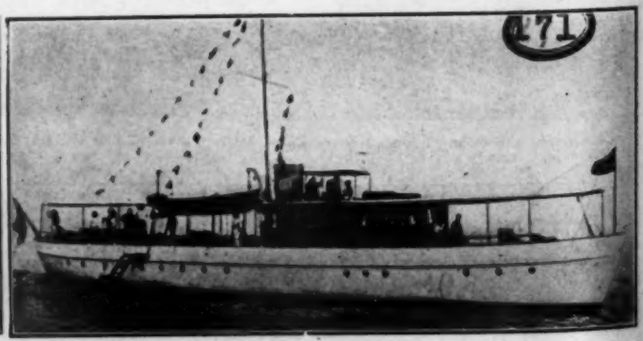
No. 857—For Sale—65 ft. x 12 ft. x 3 ft. 6 in. Power Boat. Speed 12 miles. Built in 1917. Six cyl. Sterling motor. Complete equipment. Excellent boat for Florida service. Two staterooms, large saloon. Price attractive.



No. 532—For Sale—Twin screw power boat, 71 ft. x 12 ft. 6 in. x 3 ft. draft. Speed 12 miles. Speedway motors. Handsomely furnished.



No. 606—For Sale—Modern 122 ft. steel steam yacht. Splendid accommodations. Two deckhouses. Five staterooms.



No. 171—For Sale—Modern 91 ft. cruising power yacht. Accommodations well arranged. Four staterooms, bath, large saloon. Price attractive.

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Pollyanna FOR SALE—A high-grade 33 ft. x 8 ft. 6 in. x 3 ft. cruiser, well built and in fine condition, electric lighted throughout, 15 h.p. 4 cycle, 3 cylinder Palmer engine, 8¾ m.p.h. in still water. Most comfortable and attractive interior accommodations. $1500. O. J. Dorwin, 551 W. 170th St., New York City.

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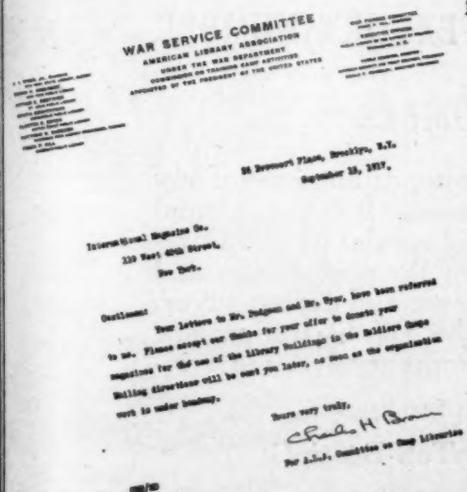

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AMERICAN LIBRARY ASSOCIATION
UNDER THE WAR DEPARTMENT
COMMISSION ON TRAINING CAMP ACTIVITIES
APPOINTED BY THE PRESIDENT OF THE UNITED STATES

Navy Yard Plant, Brooklyn, N.Y.
September 18, 1917.

International Magazine Co.
119 West 40th Street,
New York.

Gentlemen:

Your letters to Mr. Padgett and Mr. Dyer, have been referred to me. Please accept our thanks for your offer to donate your magazines for the use of the Library Buildings in the Soldiers Camps

Building directions will be sent you later, as soon as the organization work is under headway.

Yours very truly,
Charles H. Brown
For Asst. Committee on Camp Libraries

The publishers of MoToR BoatinG take great pleasure in sending complimentary copies of this magazine to the sailors through the American Library Association which has been appointed to this work by President Wilson.

GRAY'S ENGINE BARGAINS.

We have secured for Experimental Work and in trade, other makes of engines which are being closed out at wonderful bargain prices—"First Come, First Served."

3 H.P. Ferro Special, 3⅜ in. x 3¼ in. Brand new engine $47.50
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Slightly Used Gray Demonstrating Models.

We have a few engines that have been used only for demonstrating. These engines are in first class shape and fully guaranteed. They are just as good as new, guaranteed like new engines, completely overhauled, refinished and retested.

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GRAY MOTOR COMPANY, 1112 Connors Lane, Detroit, Michigan.

GENUINE BARGAIN—15-28 H.P. four-cylinder, four-cycle, Fay & Bowen Engine, reverse gear, Bosch Magneto, mechanical oiler, used two months. Will be sold with new engine guarantee for $600.00. Marine Equipment & Supply Co., 610 Arch Street, Philadelphia, Pa.

FOR SALE—Three-cylinder, two-cycle, nine h.p., light speed engine, new box coil, bronze shaft, 15 in. x 23 in. speed wheel, carburetor, plugs. In good running order. Bearings good. Good engine for speed-boat or runabout. Reason for selling, too much power for my boat. First check or money-order for $60.00 takes the outfit. Will trade for good air-thrust or airdrive motor. Jack Knight, Sarasota, Fla. Box 483.

COMPASS WANTED—For cruiser to fit round binnacle, 7½ inches in diameter. Address K. M. I., care MoToR BoatinG, New York, N. Y.

FOR SALE—Handsome, Palmer built, 39-ft. x 9-ft. 6-in. x 3-ft. Cruiser. Delivered, late in 1916. Slightly used. Cabins and cockpit built entirely of mahogany. Completely equipped. 4-cylinder Palmer motor. Cedar and mahogany tender on davits. In commission on Shrewsbury River. Full particulars on request. Splendid boat for Florida waters. Robert E. Ross, New Brunswick, N. J.

Trimount Whistle Blower Outfits
Blower runs by friction contact with engine flywheel. Whistle of brass, nickel-plated.
Made in 3 sizes.

Trimount Rotary Hand Bilge Pumps
All bronze composition. Suction lift 6 to 20 feet. A lifelong convenience.
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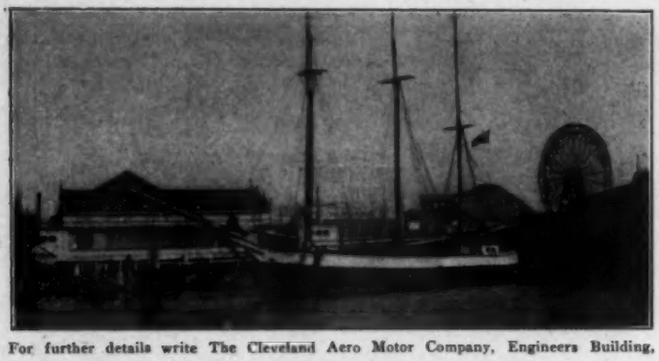
(Factory: Whiting Ave., East Dedham, Mass.)

THE MoToR BOATinG MARKET PLACE

The rate for "For Sale" and "Want" advertisements is 3 cents per word, minimum 75 cents. If an illustration is used, the charge is as follows, which includes the making of the cut:
Cut one inch deep, one column wide..... $2
Cut 1½ inches deep, 1½ columns wide..... $5
Cut three inches deep, three columns wide..... $15

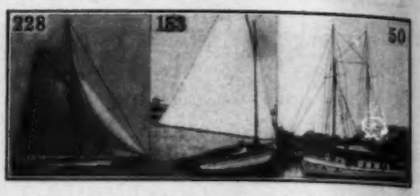
Opportunities for the Motor Boatman

Before you buy or before you sell examine the exceptional buying and selling opportunities under the heading. They comprise the best offer of the month. Please mention MoToR BoatinG.

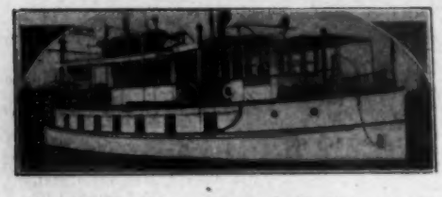


For further details write The Cleveland Aero Motor Company, Engineers Building, Cleveland, Ohio.

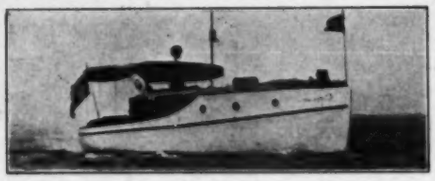
FOR SALE — Registered three-masted schooner "MELITTA," 90' x 21' x 5'6". Displacement, 68 tons. Carries three topmasts and has complete suit of 10 sails. Measures approximately 100 feet from the water to the main topmast truck. Two anchors, about 90 fathoms of chain and all necessary apparatus for handling them. Has registered yawl boat, also an 18-foot rowboat. Built at Manitowoc, Wis., in 1881 for the Lake Michigan Lumber Trade. Recently fitted out at considerable expense. With slight repairs will make a valuable cargo boat. Now moored at Detroit. Exceedingly attractive price as must be sold by December first.



228—85 ft. Herreshoff Sloop, make splendid Ketch, Yawl or Schooner. Sacrifice $2,000, New York.
50—59 ft. Auxiliary Schooner, 3 staterooms, 22 h.p. 4 cyl. Wolverine. Snap, $5,000, New York.
153—23 ft. Sloop, $150, Toronto.
Free Illustrated Boating List. New and second-hand Engines. Canadian Boat & Engine Exchange, Toronto.



No. 6867—For Sale or Charter—In Florida waters—70 ft. Power Houseboat; probably the best boat of the type. Full particulars from
FRANK BOWNE JONES, 29 BROADWAY, NEW YORK
YACHTS OF ALL TYPES FOR SALE AND CHARTER



No. 371—For Sale—32 ft. x 9¼ ft. x 2 ft. 3 in. Gasoline Cruiser; high class engine; outfit new 1916; sleeps six separately. Further particulars from
FRANK BOWNE JONES, 29 BROADWAY, NEW YORK
YACHTS OF ALL TYPES FOR SALE AND CHARTER

USE "SNAPPER" ENGINES for your small boat. They are a big little engine built by The Automatic Machine Co., Bridgeport, Conn.

FOR SALE—One Barber, 2-cylinder Motor, 5¾" bore, 5½" stroke, with reverse propeller. $135.00. Must be sold to settle estate. W. J. Osborne, 237 Dock St., Schenectady, N. Y.

Gentleman owning fifty-five foot motor yacht would consider proposition for use of same in Florida waters during winter, in exchange for expense of trip both ways, reserving to himself use of boat Feb. 1st to March 15th. Address Capt. H. C. Annis, care of P. L. Co., 24 University Place, New York City.

FOR SALE—"Iris II." Fastest Canadian Hydroplane. three step design, 26 x 6 ft. Mahogany throughout, seating capacity eight. 200 H.P. 8-cylinder Sterling Racing motor. Completely equipped, launched and tested out late last fall and conceded by experts the most perfect planning hydroplane afloat. Photos, price and full particulars upon application. Thos. Enright, 260 Brunswick Ave., Toronto, Canada.

A few medium and high speed four and six cylinder, four cycle motors, new or rebuilt. Reliance Motor Boat Co., 207th St., Harlem River West, N. Y. City.

FOR SALE—Raised deck cruiser, 32 x 9, sound, fully equipped, in commission, accommodates six on long cruise. Consider exchange for sloop hull, not racing type. Correspondence invited. Box 11, MoToR BoatinG.

ENGINES FOR BOATS, ICE SLEDS, HYDROPLANES AEROPLANES, for TRUCKS, TRACTORS, FACTORIES and FARMS bought, sold and exchanged. Largest dealers in engines for every purpose and supplies of every nature for cars, trucks, boats, etc. 3 cyl. 5 x 5 VIM two cycle $135. 4 cyl. 7¼ x 10 MODEL, $485 and a hundred others. Send for big list and state your needs. We have what you want at price you want to pay. Badger Motor Company, Milwaukee, Wis.

Mobile, Ala., is an ideal location for building of power boats. Midway of the Gulf Coast, cheap timber, near the Birmingham steel mills. Big demand for power boats all along the Gulf, Cuba, West Indies and Central America. Direct steamers to said countries. Mobile Light and Railroad Co.

OIL ENGINES, direct reversing on fuel. Better than Bolinder's. Proven in service. Standardized. Designer wishes to make arrangements for working U. S. patents recently issued. Address Designer, 28 Airedale Avenue, Chiswick, London, W. 4., England.

DON'T SCRAP YOUR ENGINES ON ACCOUNT OF SCORED CYLINDERS OR POROUS HOLES.
We repair them by our Patented Process—fusing a silver and nickel alloy electrically without warping or enlarging the bore. Write to our nearest plant. L. Lawrence & Co., New York, 546 W. 45th St.; Detroit, 1246 E. Jefferson; Chicago, 1522 Michigan Ave.; Newark, N. J., 292 Halsey St.

WANTED—An auxiliary, 18 to 22 feet, draft about 2 feet. Must be a stout safe boat, not old, in good shape and an undoubted bargain. R. H. Ashley, 416 Huntington Ave., Boston.

CANADIANS, Second-hand engine bargains. Send for list. GUARANTEE MOTOR COMPANY
73 Bay Street, North Hamilton, Ont., Canada

Don't Forget—December MoToR BoatinG is the

ANNUAL BUYERS' REFERENCE AND EXPORT NUMBER

and the

TENTH ANNIVERSARY NUMBER

December MoToR BoatinG is always the most important issue of any marine magazine published throughout the season. It is the Annual Buyers' Reference and Export Number, the big special issue that reviews the development of the marine trade for the past season and contains information of every sort for the domestic and export buyer. This year December MoToR BoatinG is also the Tenth Anniversary Number. It will be more complete, more comprehensive, more interesting than ever.

Don't miss your copy of December MoToR BoatinG

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Desirable yachts of all types for sale and charter
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BRUNS, KIMBALL & CO., Inc.
115 Liberty Street New York City
Offer over 200 re-built engines, backed by a strict guarantee, at especially attractive prices. List will be sent free for the asking. Your present engine will be taken in part payment for a new Sterling, Kermath, Hartford, Missouri, Universal, and Aristocrat, 4 cycle; Eagle, Hartford, Cady & Arrow, 2 cycle; Missouri heavy oil engines, simple and economical. Write for offer.

CAPE COD Power Dory Company

Our Leader 20 ft. Special. The safest little family boat built. Will stand the ocean waters. Motor housed in. And many other small boats.
Factory—Wareham, Mass., 367 Main St. Tel., 5-6
Boston Showroom & Office, 78 Haverhill St. Tel., Richmond 643

Yard and Shop

(Continued from page 37)

Testimonials—Ever-Warm Safety-Suits

When the ship upon which he was traveling was torpedoed in the North Sea, Charles Beecroft, motion picture exporter, was in the water more than four hours until rescued, but an Ever-Warm Safety-Suit, manufactured by the International Life Suit Corp. of New York City, kept him dry and comparatively comfortable all the time. If it had not been for his Safety-Suit, he likely would have shared the fate of the many who were drowned.

Dr. George E. Brewer, head of the Presbyterian Hospital Unit, said that he regarded the Ever-Warm Safety-Suit as 90 per cent. life insurance, and that the nurses and doctors ready to sacrifice their lives on the other side were entitled to this protection.

An army officer describing the ramming of a transport tells of the feeling of security his party enjoyed, knowing that the Safety-Suit would protect them.

New Government Publication

The Department of Commerce announces the publication by the U. S. Coast and Geodetic Survey of a new chart No. 215—Connecticut River Entrance to Deep River—scale 1/20,000 (3⅓ inches to the nautical mile), dimensions 39 x 33 inches, price 50 cents. The principal feature on No. 215 is the entrance of the Connecticut River and its approach from the Sound.

This chart and its companion, No. 216, Duck Island to Mission Reef, published in July, were designed with special reference to the intricate along-shore navigation of this part of the Sound. The price of 216 is also 50 cents.

The combined charts cover a stretch of coast 18 miles in length from Hatchett Point on the coast to Falkner Island on the west.

A New Steering Wheel Plant

The completed plant and efficient organization of the Standard Steering Wheel Co., of Cleveland, O., are now ready for specializing in the manufacture of steering wheels for automobiles, airplanes, motor trucks, tractors and motor boats.

Operating as they do in connection with the Piqua Walnut Mills and the Hartzell Walnut Wheel Co., they are insured a continuous supply of raw material of fine quality for use in making steering wheels, wood rims and spiders.

Twin-Screw Thorobred Installations

Twin-screw Thorobred installations are plentiful and are giving satisfactory service, according to the many reports from owners received by the Red Wing Motor Co., of Red Wing, Minn., and of these twin installations few are more interesting than the boat J.J., owned and operated by J. A. Johnson, of Anchorage, Alaska.

J. J. is a 46 x 10-foot launch and her power equipment consists of two 18-24 h.p. four-cylinder four-cycle Red Wing Thorobred motors, one running to the left and the other in the opposite direction. This boat is one which is in steady service, and the owner has had good opportunity to test the performance of his power plant. In a recent letter to the manufacturers he said: "I find it to be what you represented and better. I gave it a good test during the summer and have learned to like these motors. I will always have a good word for the Red Wing Thorobred. The impulse starter is a good addition."

Another twin-motor installation of Red Wing Thorobreds is in a boat at Hong Kong, China, owned by E. E. Smith and Co.

The Red Wing company is specializing on twin-power installations as they have proved to be successful, and many of the twin-motored crafts which have been launched throughout the country this year carry a pair of Thorobreds.

Fontinalis, with Reduction Gear Installation

Fontinalis is an auxiliary schooner, designed for Dr. C. G. Jennings, of Detroit, by George Owen, assistant professor of naval architecture of the Massachusetts Institute of Technology of Cambridge, Mass. She is 63 feet overall length with a 45-foot load waterline, 14½-foot beam, 7½-foot draft and displaces 65,000 pounds. Hogden Bros., of East Boothday, are the builders.

A Sterling Model F-H four-cylinder motor turns a 28 x 22-inch towing propeller at 400 to 600 r.p.m. through a reduction gear box, and Fontinalis when becalmed is able to slip through the water at a 10-mile speed. Considering the length, beam and draft of the craft, the speed is remarkable in that it is accomplished with a 25-55 h.p. motor.

Fontinalis is the type of sailing craft most seaworthy in lake storms, which blow up quickly and require a hurried shortening of canvas. This craft ought to outride almost any storm, while with the addition of power capable of a 10-mile speed, she can lie hove-to with absolute safety.

An Opportunity for Agencies in Sicily

We have received the following letter from Filippo Vitrano, of 62 via Principe Belmonte, Palmero:

"For a number of years we have handled motor boats, and boats in general, whether for sporting or industrial purposes, which business we have been able to carry on with little difficulty—because at the first outbreak of the European War we managed to obtain a supply of motor boats, all American, which we were able to sell in Sicily.

"Then we were obliged to suspend all efforts to spread the use of gasoline motors in our seas for reasons easy to understand. Now we wish to resume this work in a much larger and important manner, and on this account are desirous of making a good connection.

"On account of the enormous cost of Italian marine motors, and all accessories for the boats, and of the small skill of our boat builders in this field, we intend opening a show for the exhibition and sale of all that pertains to marine motors and boats—all of which will come from your country, the only one that is efficient and well provided with material.

"For this reason we are desirous of finding some American firms well disposed to help and co-operate, to give us their sole agencies for Sicily and at the same time to send us a deposit for the account for a brand new boat or slightly used ones, accessories and furnishings complete, gasoline motor, plans for building the boat, etc.

"We think by the getting together of such material we can hope for the foundation of a good business. We send to you who must be in constant relation with all the best firms of this kind to ask some of them to advance some proposition."

(Continued on page 52)

Shine Up Your Boat With
LIQUID VENEER
The World's Greatest Motor Boat Polish

K-A-U-R-I TRADE MARK Waterproof Spar Varnish
For all OUTSIDE AND INSIDE work. Defies Salt Water. Guaranteed.
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DYSON
Standard Screw Propellers
SPEED-POWER-EFFICIENCY
AMERICAN MANGANESE BRONZE CO.
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Buy Battleship Bunting
BETSY ROSS FLAG CO.
FAMOUS FOR FLAGS
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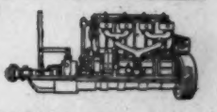
ANDERSON ENGINES
are good engines
2½ to 150 H. P.

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New York Office, N. W. Cor. Broome & Lafayette Sts.

Kyanize
Waterproof Spar Finish White Enamel
Nothing else is "just as good"
Boston Varnish Co., Everett Sta., Boston, U. S. A.

YOU WANT THE BEST
Hitchcock's Automatic Bilge Bailer
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Baldridge Reverse Gear
BALDRIDGE GEAR COMPANY
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V-Bottom Speed Type
Belle Isle Boats
Two Stock Sizes—25 and 28 Feet. Speeds 16 to 45 Miles. Hulls or Completed Boats. Send for Catalog.

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U. S. N. DECK PAINT
For nearly 25 years unequalled for decks and hulls because of its durability.
THE BILLINGS-CHAPIN CO.
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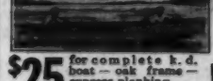
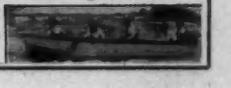
LOWEST PRICE BOAT IN THE WORLD

$89 for 16-foot boat finished ready to run, with either inboard or outboard motor.
Builder-Agents Wanted
$25 for complete k. d. boat — oak frame — cypress planking.
Free Catalog—160 Boats
BROOKS MFG. CO.

6311 Ship St., Saginaw, Mich.

Practical Navigation for the Motor Boatman

(*Continued fom page* 17)

but understood as a logical method of procedure: if the course is north-easterly drop the letter N and E, if south-easterly drop the letters and subtract the degrees from 180°, if south-westerly add to 180° and drop the letters, if north-westerly subtract from 360° and drop the letters.

Having learned how the compass is graduated in points and degrees, the behavior of the instrument when moved from one part of the world to another or brought within the sphere of influence of a large mass of iron should be studied. It is generally known that the compass does not point at the north pole but at the north magnetic pole which is situated north of Hudson Bay as shown in Fig. 2. This figure also shows roughly how the geographical position of the magnetic pole causes the compass to point in different directions when in different parts of the earth, the arrows in each case pointing straight at the magnetic pole and thus showing how the compass would point in that locality. This error of the compass is called "variation" and is called "westerly variation" when the *north point* of the compass points to the west of north geographical pole. When the north point of the compass points east of north the variation is called "easterly variation," the student should always remember that the words easterly and westerly when applied to variation refer to the north point of the compass. Fig. 3 shows a compass with a 1½-point westerly variation; now if the lubber's mark of this compass came opposite North—in other words if the compass indicated north as a course—the true course—would evidently be N by W ½W. If the compass course was E the true course would be E N E ½E. If the compass course were south the true course would be S by E ½E. In short a careful inspection of the diagram will reveal that to a person imagining himself standing in the center of the card and slowly turning round and facing all the points in order each point will be 1½ points to the *left* of where it should be, and if the lubber's mark could be moved 1½ points to the left the compass would indicate true courses as long as the variation did not change. Then to get a true course from a magnetic course it is only necessary to imagine oneself standing in the center of the compass facing the point in question, if the variation is westerly the true course will be indicated by the point lying the amount of the variation to the *left* of the point faced. The student should study diagram 3 until he has convinced *himself* once and for all of the truth of this statement and it will then be easy to remember and apply the old seaman's rule "From 'magnetic' to 'true' to the *left* if the variation is westerly, to the *right* if easterly." In applying this rule always imagine oneself standing in the center of the compass as explained above. A little more study of diagram 3 will show that if a vessel wants to go true north she will have to steer N by E ½E by compass so in this case the former rule is reversed and: "From 'true' to 'magnetic' to the right if the variation is westerly, to the left if easterly." Like all "rules of thumb" these rules are only valuable when the reason underlying them is mastered.

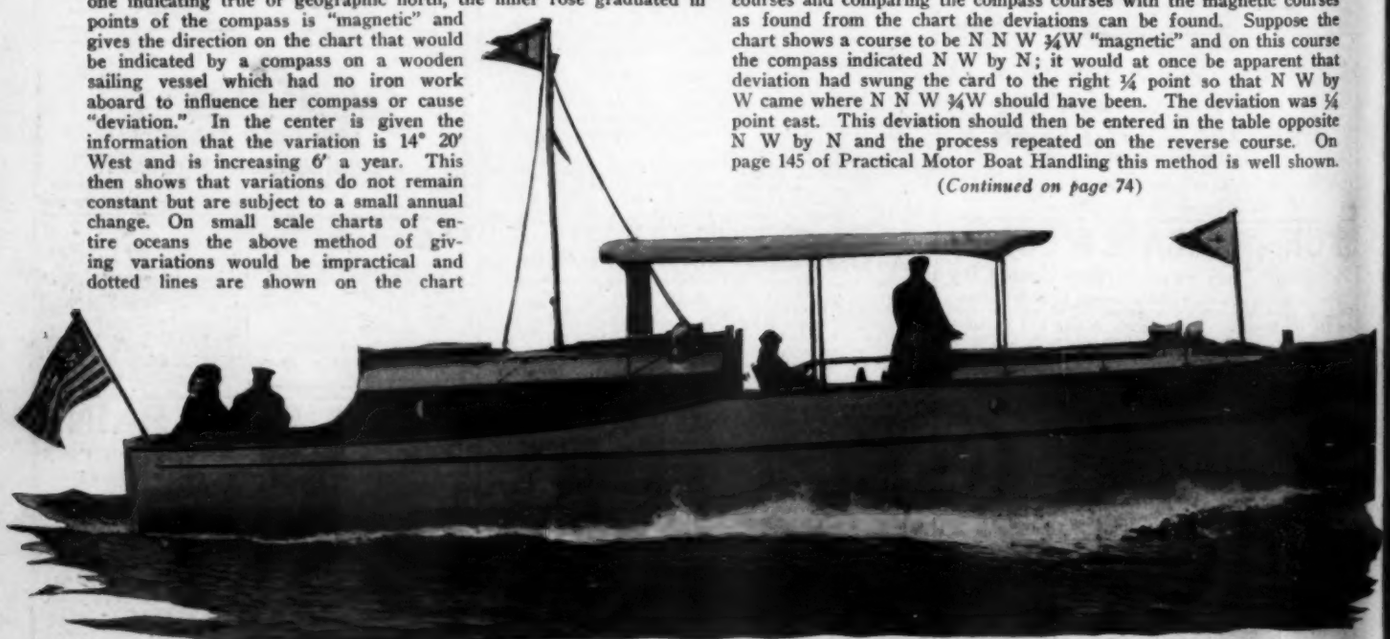
The student now knows what variation is and should be on the way to knowing how to apply it. It remains to learn how to determine what the variation is at any place. This is easily done as all charts give the information. Fig. 5 shows the campass rose of an ordinary coast chart, the outer graduations are in degrees and the compass is a true one indicating true or geographic north, the inner rose graduated in points of the compass is "magnetic" and gives the direction on the chart that would be indicated by a compass on a wooden sailing vessel which had no iron work aboard to influence her compass or cause "deviation." In the center is given the information that the variation is 14° 20′ West and is increasing 6′ a year. This then shows that variations do not remain constant but are subject to a small annual change. On small scale charts of entire oceans the above method of giving variations would be impractical and dotted lines are shown on the chart indicating the amount and direction of the variation. Fig. 4 is a fragment of such a chart of the North Atlantic, the lines show that near Nantucket Shoals the variation is 13° W, the variation at points between the lines of variation being estimated by the relative distances to two adjacent lines. It is important that it be remembered that variation is the compass error due to the position of the magnetic pole, and that courses obtained from a compass uninfluenced by iron on the vessel are called "magnetic" courses. Magnetic courses are also obtained directly from the inner compass rose of coast charts. When magnetic courses are wanted from charts of large oceans they must be obtained by applying the variation which exists in the ship's position to the true course obtained from the compass rose. On such charts there are no magnetic compass roses.

On steel ships or ships where there is any amount of iron or steel in the form of machinery, etc., there is another compass error called "deviation." Deviation then is the effect of the ship on her compass, and the amount of the error produced naturally depends on the relative position of the ship and the needles of the compass, in other words deviation varies as the ship is put on different courses. On motor boats there is usually some deviation due to the engine, but the deviations should not be unmanageably large unless the compass has been placed near some piece of iron. On steel vessels the deviations would be extremely large were it not for the fact that expert "compass adjusters" place magnets on the deck and in the base of the binnacle to counteract the effect of the ship's magnetism. The small residual errors are taken care of by giving the officers of the vessel a table of deviations which is framed and put in the wheel house. This table gives the deviation in degrees when the vessel is heading to each point of the compass. To get the magnetic course from the compass on a vessel where the compass has deviation it is necessary to note the compass course and the corresponding deviation in the table of deviations; then apply the deviation to the compass course just as a variation would be applied to a magnetic course—i. e., "to the left if westerly." An example may make it clearer. Compass course N 52° E deviation on this course 3° E. The point lying 3° to the right of N 52° E is N 55° E which is the *magnetic* course. If the true course is wanted it may be obtained by applying the variation to the magnetic course found as above, but it is simpler to combine the deviation and variation into one "compass error" and apply this to the compass course. Thus: Compass course N 52° E, Deviation 3° E, Variation 8° W. The "error" 8° W—3° E = 5° W, and the true course lies 5° to the left of N 52° E or is N 47° E.

On small motor boats where deviations are not large it is unnecessary to have a compass adjuster correct the compass, as a table of deviations can be readily made by the navigator. The deviations can be obtained by taking bearings of the sun and comparing these with sun's true bearing as computed by astronomical methods, or by comparing the compass bearing of a certain course with the real bearing of the course as taken from a chart. Only one way of applying this latter method will be discussed here, other methods will be described later.

To find the deviations locate a number of courses which lie on ranges between aids to navigation, then by putting the boat over these courses and comparing the compass courses with the magnetic courses as found from the chart the deviations can be found. Suppose the chart shows a course to be N N W ¾W "magnetic" and on this course the compass indicated N W by N; it would at once be apparent that deviation had swung the card to the right ¼ point so that N W by W came where N N W ¾W should have been. The deviation was ¼ point east. This deviation should then be entered in the table opposite N W by N and the process repeated on the reverse course. On page 145 of Practical Motor Boat Handling this method is well shown.

(*Continued on page* 74)



Speedway Scout is a production of the Gas Engine & Power Co., and Chas. L. Seabury & Co., Cons., of Morris Heights, N. Y. A perfect combination of cruisability and a fair speed is brought out in the design of this cruiser. With her Speedway power plant she attains a speed of 20 m.p.h.

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KING OF WINTER SPORTS
SPEEDS UP TO 50 MILES PER HOUR

The Aero-Sled is steered and controlled like an automobile. It has cushioned seats, auto steering wheel, hand brake and steel shod runners. In its design we have paid special attention to safety and comfort at high speeds. You can glide smoothly along at a rate of ten miles an hour and on smooth ice you can travel 50 miles an hour if you wish.

Can you imagine a more exhilarating sport?

This is the powerful little motor used on the Aero-Sled. It is the regular Aerothrust Outboard Marine Motor, one of the most popular rowboat motors on the market. It is a smooth, efficient, vibrationless engine, developing 3 H.P. and designed to operate at any speed from 250 to 1800 R.P.M.

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Two cylinder opposed, air cooled, with built-in-flywheel magneto. Fitted with 32 in. aero propeller. You can use the same engine on your rowboat in summer.

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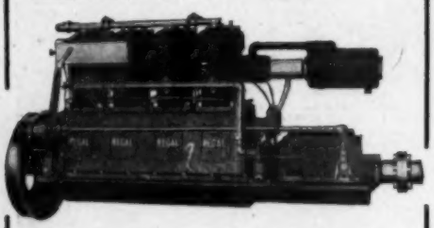
We have dealers located in most parts of the world. 35% of them have been selling Regal engines for six years or less, 65% have been selling Regal engines for a period lying between six to twelve years, and 10% of our agencies have been handling Regal engines between twelve and sixteen years.

Our agents have continued selling Regal engines during so many years for the simple reason that they give satisfaction to their customers.



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Applied with putty knife, to either wet or dry wood or metal boats. No heating.
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Manufacturers of the Arrow 2 cylinder, 4 H.P. detachable; famous Waterman Ports 1 cylinder, 3 H.P. detachable; K-1 inboard engine single cylinder 2 H.P., weight 30 pounds; K-2 inboard engine double cylinder 5 H.P., weight 60 pounds; model A-4 special 4—6 H.P. inboard.
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Leatherwove
L. C. CHASE & CO., BOSTON

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Columbus Mfg. & Supply Co., Inc.
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Yard and Shop

High Go, a 30-Foot Runabout

High Go, a rather unusual type of runabout, was recently completed for Preston Player of Boston, by the Camden Anchor-Rockland Machine, Co., of Camden, Me., at a cost of $2,500. The boat was originally designed by John Alden and altered in accordance with the ideas of John Bird of the Camden company, and C. L. Homer.

She is an exceptionally fast and dry little boat, 30 feet long by 5 foot 9-inch beam and has a speed of 18 m.p.h. The motor is a Model B 20-35 h.p. Sterling. It is installed amidships in a compartment by itself. The interior is finished in mahogany, and extreme care was taken to fit each piece absolutely accurate. High Go is one of the highest grade runabouts at Boston or Dark Harbor, where Mr. Player sojourns during the summer.

Clubs

Ambrose Channel Y. C. Regatta

The Ambrose Channel Yacht Club, foot of Bay 22nd Street, Bath Beach, held its sixth annual regatta at the clubhouse recently.

The first race was from the stake boat, Gravesend Bay, to Roamer Shoal and return, the result being as follows:

1 Naughty Girl
2 Content
3 Idle Hour

The weather conditions were good until the boats passed Norton's Point, from there on the racers tossed considerably, and it was only by good seamanship that the winners came home by such a close margin, there being just a few seconds between the three winning boats.

The second race was a ten-mile triangular course. From the stake boat in front of the clubhouse to the Spar buoy at Fort Hamilton, and from there to the Can buoy at Fort Wadsworth and return, the boats going twice around. The winners being the same consistent boats finishing one, two, three, but in different order.

1 Content
2 Naughty Girl
3 Idle Hour

Honor Roll

(*Continued from page 33*)

Wm. T. Jebb.
J. Lawrence.
G. Manning.
C. E. Perkins, Inspector.
L. Reilly, Inspector.

The Rudder
F. Goeller.

Trimount Rotary Power Co., East Dedham, Mass.
W. Barry, Navy.
J. F. Dooley, Army.

Valentine & Co., New York, N. Y.
Wm. Macrae, 7th Inf., N. Y.
C. Wilson, 7th Inf., N. Y.
C. Wagner, Army Medical Corps.
J. Johnson, U. S. Signal Corps.
C. Stone, Corporal, N. J. Field Art.
A. Linz, 71st Inf., N. Y.
Chas. G. Freiberger, National Army.
L. G. Bruggemann, American Field Service in France.
P. W. Hardy, U. S. Aviation Corps.
F. R. Blount, Jr., U. S. Aviation Corps.
Thos. F. Ryan, 2d U. S. N. R.
Jos. Zaslavsky, Q. M. Dept., U. S. A.
A. P. Barberi, U. S. Naval Militia.
A. W. Keane, U. S. N. R.
A. McKenzie, U. S. A. Infantry.
L. Phillips, N. Y. Div. Headquarters Troop.
W. J. Harding, Jr., Lieut., U. S. Engineers.
Jos. P. Flynn, U. S. Cavalry.
Wm. Luks, U. S. Cavalry.
Wm. O'Keefe, U. S. Cavalry.
Valentine Tallman, U. S. Cavalry.
Henry P. Barnett, National Army.

Winton Engine Works, Cleveland, Ohio
A. G. Griese.

Yachting
Herbert L. Stone, U. S. N. R. F.

War Tax on Motor Boats

(*Continued from page 56*)

not over five net tons with fixed engines, $5.

In determining the length of such yachts, pleasure boats, power boats, motor boats with fixed engines, and sailing boats, the measurement of over-all length shall govern.

In the case of a tax imposed at the time of the original purchase of a new boat on any other date than July first, the amount to be paid shall be the same number of twelfths of the amount of the tax as the number of calendar months, including the month of sale, remaining prior to the following July first.

TAX ON CLUB DUES

Sec. 701. That from and after the first day of November, nineteen hundred and seventeen, there shall be levied, collected, and paid, a tax equivalent to ten per centum of any amount paid as dues or membership fees (including initiation fees), to any social, athletic, or sporting club or organization, where such dues or fees are in excess of $12 per year; such taxes to be paid by the person paying such dues or fees: Provided, That there shall be exempted from the provisions of this section all amounts paid as dues or fees to a fraternal beneficiary society, order, or association, operating under the lodge system or for the exclusive benefit of the members of a fraternity itself operating under the lodge system, and providing for the payment of life, sick, accident, or other benefits to the members of such society, order, or association or their dependents.

Sec. 702. That every person, corporation, partnership, or association (a) receiving any payments for such admission, dues, or fees, shall collect the amount of the tax imposed by section seven hundred and one from the person making such payments, or (b) and shall make returns and payments of the amount so collected, at the same time and in the same manner as provided in section five hundred and three of this Act.

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We make searchlights in sizes from 7 in. to 60 in. diameter, suitable for small launches and yachts and for the largest battleships. Send for Catalog A.
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Speed up to 70 miles per hour
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Write today for new booklet "Spanning The Seven Seas." And learn how much more useful your boat will be when C & W Wireless Equipped.
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Well designed—carefully built—best materials.
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All four cycle engines.
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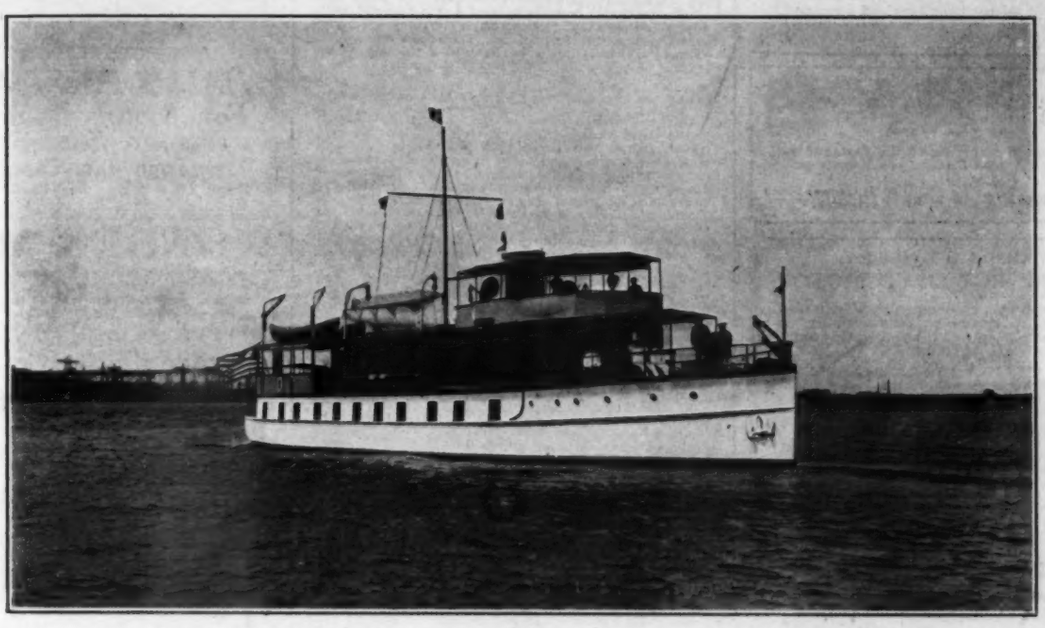

106-ft. Houseboat Leonie, designed and built by us for Mr. Murray Guggenheim, New York

THIS winter, while we are bending our utmost efforts to assist your Uncle Sam in "making the world safe for democracy," it will be no small satisfaction to us to realize that in Florida

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will be making enjoyable the leisure moments of many of America's busiest men.

Added to the large and growing family of Mathis-built houseboats which have been the feature of every Florida season since 1909—when we created the new-type Cocopomelo—will be the boats of men who know where and how to get the utmost in service and comfort. Men like

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A. P. ORDWAY, NEW YORK, whose 71-ft. houseboat Jane VI, we completed last winter.

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The same service which we have given these men is yours, when you are ready to plan or build your houseboat, or cruiser.

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on the weeds, rocks, and snags that gives your under water propeller so much trouble. The "Airdrive" will take your boat anywhere it floats. Practical, efficient, economical, quiet, and dependable power for shallow draft boats up to 35 foot. Thrust 95 to 100 pounds. Ask your dealer, or write us. **KEMP MACHINE WORKS,** 1217 So. Franklin St., Muncie, Ind.

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Better than Varnish, Shellac or Lacquer for Every Purpose. Write for free sample.
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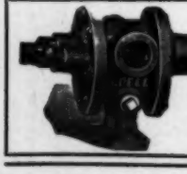

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CONNECTICUT
IGNITION—IGNITION CONTROLS
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Self Aligning. The entire bearing swivels in the arm. No bushings. No babbitt. No trouble. Manganese bronze or cast steel.

McFARLAN & SPILKER MFG. CO. CINCINNATI, O.

Naval Reserve Force Very Active

(*Continued from page 34*)

proper numbers not many more than 300 men, and these have to stand guard, do mess duty and patrol the down-town district for themselves and about 600 others—yeomen, machinists, etc. In addition to such routine duties they must do their infantry drill and attend classes in seamanship, navigation and other subjects which round a rookie into a thorough-going sailor.

ATHLETICS AND PHYSICAL TRAINING RECEIVE ATTENTION

On October 8 a squad of sixteen men in addition to the three coaches, Black, Barrett and Gerrish were transferred to the Torpedo Station where they will undergo a regular course of training in preparation for the hard games that confront them. The team is not solely a Reserve organization but represents the entire Second Naval District. Any man from the Training Station, Rose Island, Torpedo Station or from any section of this district will be given the privilege of demonstrating his right to replace one of the initial sixteen. From the eleven best of these men the coaches will form the varsity squad that is to play a complete schedule of games, while a second team will be formed from men who just fail to make the first and others who make a good showing. The second varsity should be as important in foot-ball circles among the Reserves as a Freshman team is in a big university. The varsity will be under the management of Warrant Machinist Overlock, U. S. N., of the Torpedo Station, a man of proven ability.

On the morning of Thanksgiving Day the Reserves meet the eleven from Camp Devens, coached by the renowned Percy Haughton, of Harvard fame, and composed of the best talent throughout New England, many of them stars in college foot-ball. This clash will be staged at the National League Base-ball Park in Boston. No doubt this game will take the place of the usual Army-Navy game played in New York every year, but which has been cancelled for this season by Washington owing to war conditions. This clash will without doubt arouse more interest than did ever an Army and Navy game, as spectators will, for the first time, see an eleven composed of the pick of the country (several of them from Walter Camp's All-American) meet in conflict a rival branch of the service composed also of material of the first rank and coached by one of the most capable and famous men in the business. It will be another test of the Yale system against that of Harvard, for Black, head coach for the Naval team, is a product of old Eli, and one of the best this school has turned out in years, while Haughton has been the man behind the gun of the Harvard squad for several years.

Without any question the Reserve soccer team, as finally selected, will rank among the best in that part of the country. Several of the candidates who have turned out for practice have been members of the teams of the City League, and one of them played in the exhibition games last year at the Panama-Pacific Exposition. Excellent material has already developed for the positions of goal, full-back and half-back, and it is now a question of picking the best men for these posts.

NEW PATROL BOATS FOR THE U. S. N. R. F.

Two of the most interesting boats in port now going through the preliminaries of official acceptance are S. P. 908 and S. P. 1228, both 60-footers. S. P. 908 is powered with two Model F-6 Sterling engines and has a speed in the twenties. A wireless is included in her equipment, also a water heater which furnishes hot water for the faucets and heat in the compartments. S. P. 908 is provided with a covered bridge protected on three sides by a steel, bullet-proof shield, and above the bridge is a platform which materially increases the range of vision of the lookout. The deck is braced forward for a 1-pounder gun. The boat will be commanded by Ensign Warren Ackerman, who was largely responsible for her construction and donation to the Government. He, with five other Reservists who will comprise her crew, conducted a campaign for subscriptions in New York, Pittsburgh and other cities and were successful in raising an amount sufficient for her building and outfitting. She was designed by Tams, Lemoine & Crane, of New York, N. Y., and built by Jensen, of Nyack.

S. P. 1228, donated by Theodore D. Cartridge, is a Seabury product constructed specifically for the purpose of turning her over to the Government service and she is consequently well adapted to patrol work. The power plant is placed just forward of amidships and consists of two eight-cylinder Speedway motors developing 200 h.p. each, and consuming approximately 50 gallons of fuel per hour. A Delco-Light independent lighting system, which charges two batteries in alternation, furnishes current for starting the main power plant and for lighting the boat. Crew's quarters are laid out forward and give accommodation for four men in pipe berths. Two men can also be slept in the engine room and lower berths in the officers' cabin aft are of sufficient width to accommodate two each. Abaft the engine compartment on the port side is a well-arranged galley with a four-burner Speedway stove, and opposite it is the officers' toilet. The S. P. 1228, also known as the Acoma, comes into Government service direct from the builders' ways and with a contract speed of 25 miles.

TRAINING ENGINEERS FOR THE 110-FOOTERS

Eight Machinists' Mates have been sent to Columbia University for instruction in Standard motors. The course will consist of five weeks' instruction, the first three being spent in theoretical work at the university and the remaining two being devoted to practical work at the shop of the Standard Motors Construction Co., at Jersey City. The work of these men will be watched with the closest attention and if satisfactory progress is shown it is probable that they will be placed on the 110-footers as chief machinist's mates.

The requirements of the service within recent weeks have been particularly severe, since the unending grind of the patrol has necessitated more or less complete overhauls for several of the boats. Certain of those remaining in service have been obliged to lengthen their periods on duty 48 hours and when off for 24 hours their crews stood on half hour call. As though such routine did not make things sufficiently difficult, more than a few men from the harbor patrol have left for aviation or college, thus making necessary a division of their work among the remaining members of the crew.

HYDE BOAT & ENGINE CO.
Rowing and Power Tenders. Dories and Runabouts built to order. Outboard and Inboard Motors. "The Best for Power, Pleasure and Price." Kenny Absolute Silencers. Send for Engine catalog.

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WONDER MOTOR

A wonderfully sturdy 4-cycle marine motor. All important parts are interchangeable with parts of the famous FORD automobile motor. Replacements inexpensive and parts in stock everywhere. 22.5 H.P. Atwater Kent ignition.

Price, $245 Write for full details. Also 2-cycle motors.

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STEERING GEARS
Standard Auto Type, $15. f. o. b. Rochester

24" from Bulkhead to Wheel. 17" Wheel. Iron Spider. 1⅛" Seamless Steel Column. Black enamel finish. Polished brass controls.

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Buy from your dealer or direct. Write for catalog.

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EVINRUDE

Detachable rowboat and canoe motors. Magneto—Built-In Fly-Wheel Type. Silencer and Automatic Reverse. Catalog Free.

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FERRO

4-Cycle .....10 to 50 H.P. 2-Cycle.....3 to 25 H.P.
Ferro Rowboat Motor
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Fyr-Fyter, the fire extinguisher, always works, killing fire instantly. See your accessory dealer.

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PUMPS
Made by the
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for circulating purposes are the very best. Hundreds of Thousands in use. Send for Catalogue.

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Metal Adjustable Shaftings

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Combination coupling and one-way clutch. Guaranteed to hold. Firm as a flanged coupling. $7.50 to $10.

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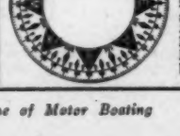

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underlighted Compasses, Course Protractors, Bearing Finders. Every navigator should have them. Send for interesting catalogue. Address Box 45, Marine Compass Company, Bryantville, Mass.

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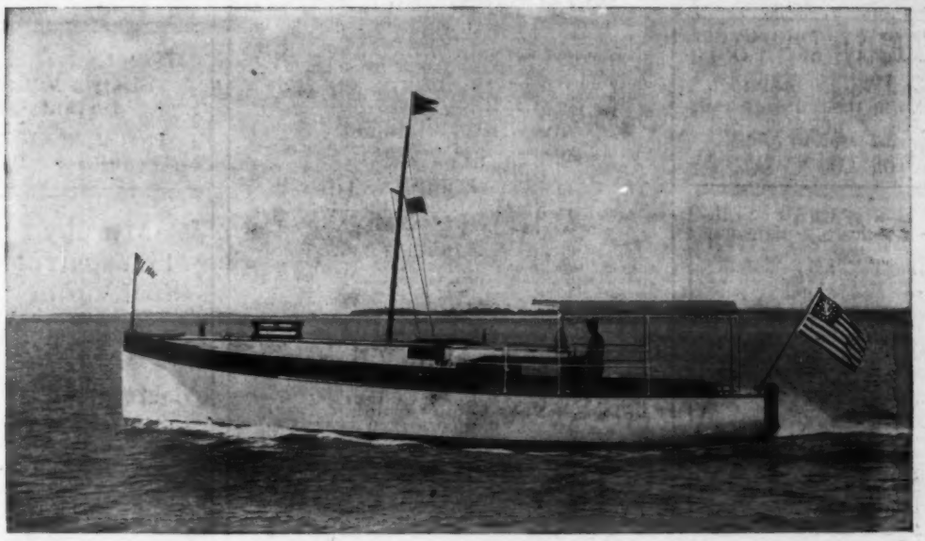


Mr. Luders' "SENTINEL"

The Luders Marine Construction Company, Stamford, Conn., has always been known as an exponent of better built boats, particularly in the larger sizes. This company was one of the first to co-operate with the United States Navy Department in designing and building the express cruiser for coast defense work. Splendid designs, coupled with unsurpassed facilities for building good boats have brought Luders cruisers in the foreground.

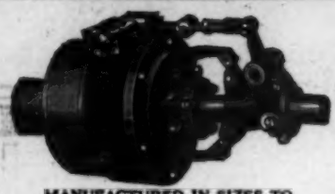
It is therefore particularly gratifying that Mr. Luders, after having had the widest experience in boats and engines of every description, should select a SCRIPPS engine for his own cruiser.

For those prospective cruiser owners who would benefit by the experience of a master craftsman, we are pleased to quote from Mr. Luders' letter of September 10th, 1917.

> "The motor of your make that was installed in this boat last autumn has given very good service indeed. I have been agreeably surprised with its sturdiness and reliability. It drives the "Sentinel," a 36-footer, weighing about six tons, at a speed of 9¼ miles an hour. The revolutions are held down to about 475 as the boat is not of a type that can be driven much faster. The gasoline consumption has therefore been very light indeed, probably not over a gallon and a half per hour. The boat easily out-distances other cruisers of about the same size, even though in some cases they have considerably more power. **In a recent fifty mile race to Stratford Shore, on Long Island Sound, she beat, boat for boat, a field of seven boats, every one of which had more horsepower, excepting only one boat which was a sister ship and equipped with double the power.**
>
> My experience with this engine has made me quite a booster for your machine.
>
> Yours very truly,
>
> A. E. LUDERS."

The SCRIPPS line is unusually complete, embodying motors of two, four and six cylinders in both high speed and heavy duty types. Catalog on request.

SCRIPPS MOTOR CO., 631 Lincoln Ave., Detroit, Mich.



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Also One Way Clutches

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JOE PETRELLI, *General Manager*
NEW HAVEN, :: CONN.

NORTHWESTERN TWO-CYCLE MOTORS
18 H. P. with Complete Electrical Equipment **$250**
Row Boat Motor, $70. 10 H.P., $150. 2 H.P., $50. 4 H.P., $75. 7 H.P., $100.
Sold on 30 Days' Free Trial. Write for Catalog.
NORTHWESTERN MOTOR CO., 850 Spring St., Eau Claire, Wis.

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When you think of buying a boat, whether it be a 16-foot Runabout, a big 36-foot Auto Boat, or something in between — remember that Mullins Steel Boats are guaranteed for life. They cannot sink, leak, waterlog, dry out or open at the seams—never require calking. Designed by America's foremost naval architects—built in the largest boat factory in the world. More than 65,000 in use. Big catalog of steel or wooden motor boats, rowboats or canoes, on request.

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MEASURE YOUR BOAT FOR A MASTEN
Improved One-Man Folding Top, Spray Hood, or Cushions, etc.
High quality at lowest prices. Quick service. "Roll-Up" Life Preservers, Kapoc filled, meet government requirements. Best for the motor-boat. Write for catalogue and prices.
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OIL ENGINES
PAY BIG DIVIDENDS.
They use 5c fuel oil instead of 20c gasoline.
SAVE 75% on your fuel bills.
PAY for their cost in a year's run.
No batteries, wires, switches, spark plugs, carburetors or magnetos. NO TROUBLE.

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KENSINGTON ENGINES
High Quality 2½-3 H.P. Low Price
Built where time and labor required to maintain a high standard are not counted in the cost.
No manufacturer could afford to build engines as good as Kensington are built. Limited number made each year. Write to-day for full details.
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Linseed Oil Rubber Paint
Write for booklet, prices, etc.
PARA RUBBER PRODUCTS CO.
27 William St. New York

Pull-U-Out For Motor Boats and Yachts
For pulling boats out, hoisting for painting, etc., or lifting engines—it's wonderful. Also pulls autos out of hub deep mud or ditch easily and quickly. Guaranteed. Booklet free.
Consists of winding drum, lever crank, 40 ft. steel cable, two 7 ft. chains, 2 stakes. Fits in 6x11x14". Weighs only 30 lbs.
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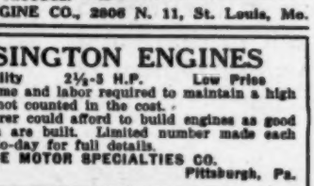
ENJOY the LURE of the WAVES
K D or Complete
Richardson Boat Co.
No. Tonawanda, N.Y.



1 H.P. to GASOLENE AMERICA'S QUALITY SMALLEY 1215 TRUMBULL ST. — SMALLEY MARINE MOTORS — 250 H.P. KEROSENE OLDEST ENDURES GENERAL Co BAY CITY MICH.

The Liberty Motor of the Sea

(*Continued from page 21*)

so cool that the motor room containing the 800 odd horsepower in the cruiser Neowam was literally cold on the quiet October morning during one of the tests on Long Island Sound. On starting, each motor responded to the first quarter turn of the self-starter, and after the clutches were thrown in and the throttle suddenly opened to full speed ahead, the motors accelerated so quickly that the boat actually jumped out of the water for a moment. The same smoothness of action was apparent on slowing down. Not the sign of shocking or back-firing could be detected.

The motor will be known as the Cottrell-Holmes and will be manufactured by C. B. Cottrell & Sons Co., of Westerly, R. I. It is of the twin-six L-head V-type having a bore of 6 inches and a stroke of 8¼ inches. It is designed to develop its rated power from 1,000 to 1,400 r.p.m. The weight complete is 3,400 pounds.

* * *

War Tax on Motor Boats

AMOUNT

Boats under 5 tons net	$5.00
Boats over 5 tons and less than 50 feet in length per foot	.50
Boats over 5 tons and over 50 feet in length, per foot	1.00

BY WHOM ENFORCED

Internal Revenue Bureau of Treasury Department, Washington, D. C.

TO ESTIMATE ROUGHLY THE NET TONNAGE OF A VESSEL

1. By the word "ton" is meant 100 cubic feet of space.

2. Multiply the extreme length of the vessel by the extreme breadth and that product by the depth from the underside of the deck to the frame in the hold taken amidships. The result obtained should be multiplied by 6/10ths. To this result should be added the cubical contents of any closed-in structure above the upper deck. The sum should be divided by 100 which will give the approximate gross tonnage of the boat.

3. From this gross tonnage may be deducted all spaces used exclusively in connection with the navigation of the boat or for the exclusive uses of the crew, such as a reasonable amount for machinery space, space for officers and crew but not for passengers (who include all persons not actual members of the crew), storage of sails, navigation instruments, boatswains' stores, etc., etc. The result will be the approximate net tonnage of the boat.

4. If the net tonnage thus ascertained is about five net tons, application should be made to the nearest customs officer for official measurement.

MEASUREMENT RULES

The following rules and regulations for admeasuring yachts, pleasure boats, etc., will be observed for finding the bases for the rates of excise taxes to be imposed on the same under the Act to provide revenue to defray war expenses, and for other purposes.

Length.—The overall length is the extreme length of the structure, *i.e.*, the length from the forward side of the stern outside the planking or plating to the aftermost side of the stern planking or plating, whether above or below the waterline. In the cases of planking or plating extending above the deck constituting bulwarks, such planking or plating is to be considered as structural part of the vessel. Forecastle decks, quarterdecks, or poop decks extending beyond the main deck are to be considered as structural parts of the vessel. The length should be taken in a straight line excluding any sheer.

Exemptions.—The following enclosed spaces above the upper deck, or such portion of them as may be so located, are to be exempted from measurement. The machinery and light and air spaces, steering and anchor gear, wheel house, galleys, water-closets for officers and crew, provided that they are no larger than required for these purposes and exclusively so used, otherwise exempt reasonable spaces used as indicated; and spaces not fully enclosed or temporarily closed by curtains.

The machinery space so located is to be treated as provided for in Art. 31, Part I, "Measurement of Vessels."

Deductions.—The following deductions may be allowed: The spaces appropriated to the use of the crew, the master, anchor gear, storage of sails, charts, signals, and other instruments of navigation and boatswains' stores, provided they are reasonable in extent, used solely for the purposes designated, and certified as required by the Act of March 2, 1895.

The space for storage of sails is not to exceed 2½ per cent of the gross tonnage.

In addition to the above deduct the propelling power space as provided for by the Act just cited.

When the propelling machinery is located in the cabin or other apartment that is used for other purposes, the machinery space, the basis for propelling power allowance, is to be considered the space occupied by the engine, and sufficient space on each side for handling it safely and efficiently, say about two feet, if there is sufficient space for such allowance, otherwise allow whatever space there is. But when it is situated in the engine room formed by bulkheads, then find it as provided for by Arts. 42 to 46, Part I, "Measurement of Vessels." Fuel tanks and bunkers, storage batteries, or other engine accessories are not to be included in the machinery space.

The terms master and crew apply only to those employed in the navigation and care of the vessel; the owner, if not sailing master, and guests are to be considered passengers.

THE LAW

Sec. 603. That on the day this Act takes effect, and thereafter on July first in each year, and also at the time of the original purchase of a new boat by a user, if on any other date than July first, there shall be levied, assessed, collected, and paid upon the use of yachts, pleasure boats, power boats, and sailing boats, of over five net tons, and motor boats with fixed engines, not used exclusively for trade, or national defense, or not built according to plans and specifications approved by the Navy Department, an excise tax to be based on each yacht or boat, at rates as follows: Yachts, pleasure boats, power boats, motor boats with fixed engines, and sailing boats, of over five net tons, length not over fifty feet, 50 cents for each foot, length over fifty feet and not over one hundred feet, $1 for each foot, length over one hundred feet, $2 for each foot; motor boats of

(*Continued on page 52*)

Get a MOHAWK
It will prove the best engine investment you ever made
S. & R. MFG. CO.
Ingersoll Ave. Schenectady, N. Y.

Tank Gauges, Draft Indicators, Electric Whistle Operators, Distant Gauge Glass
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"The varnish that lasts longest"

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for motor boats, cruisers and motor ships are carried in stock by leading dealers everywhere.
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We make them for the leading builders of marine, airplane and automobile motors. We are Integral Camshaft Specialists, insuring the utmost in quality of workmanship and materials, accuracy and uniformity.
Let us quote on your designs.
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Muskegon, Mich.

THERE'S SAFETY AFLOAT WITH PYRENE IN THE BOAT.
Pyrene KILLS FIRE SAVES LIFE

ROBERTS MOTORS
Immediate Deliveries on
Model "S" 8-10 H.P. Fisherman's Engine
$150 with Jump Spark Ignition. Make-and-Break Ignition, $165
Also on single, double and four cylinder Model "T," 4-8-16 H.P. respectively.
Roberts Motor Mfg. Co. 1105 Roberts Building Sandusky, Ohio

AVOID disaster by using a DIRIGO compass on that boat. All materials first class. No rubber gaskets to rot. A very hard pivot and high-grade jewel. Navy degree circle on dial. Brass and mahogany binnacles. Also new course finder and bearings instrument. Send for descriptive catalog.
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"Short turns at Top Speed"
THAT GOOD GULF GASOLINE is a clean, powerful gasoline, manufactured especially for the gasoline motor, from selected high-grade crude petroleum under the strict supervision of the most skilled chemists.
It is straight run, containing no kerosene or casing head mixtures, and carefully filtered for the elimination of any foreign matter.
It is used by the United States Navy in its submarines and all other gasoline-propelled craft. This, in itself, is the best evidence of its superior quality.
GULF REFINING COMPANY
There is MORE POWER in
THAT GOOD GULF GASOLINE
AND SUPREME AUTO OIL
Supreme Auto Oil
Leaves less carbon, as it contains no paraffine gum to collect and hold the free carbon.

Yacht Upholstery

Furnishings, draperies and bedding. We solicit inquiries from naval architects, builders and owners. Estimates without charge.

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For Marine Service

WINTON ENGINE WORKS

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AQUATITE

Formerly MARINITE

Is particularly recommended where quick drying qualities are a first consideration. Dries dust free in three to five hours. Will not turn white under water.

EDWARD SMITH & COMPANY

Varnish Makers for 90 Years

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CABINET MAKERS WANTED

Familiar with boat and similar construction

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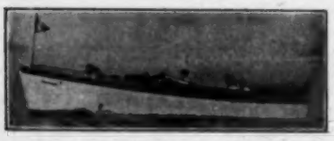

BOATS & ENGINES, ALL SIZES & TYPES. LARGE STOCK.

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MOTOR PERFECTION

is what you get in Watkins Class Ball Iron Motors. Especially fine for canoes and light boats. Constant and efficient

3 H. P., single cylinder .... 42 lbs.
6 H. P., double cylinder .... 84 lbs.
12 H. P., four cylinder .... 186 lbs.

Are light, at the same time strong; accomplished by using semi-steel castings high carbon steel shaft, bronze bearings, high class workmanship.

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The Most Reliable Bulkhead Ammeter

Weston

Model 354

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28 Weston Ave. Newark, N. J.

STANDARD OIL ENGINE

SEMI-DIESEL

A strictly heavy duty engine, for tow boats, freight boats, auxiliaries and large cruisers.

4 Cycle—6 to 250 H. P.—One to Six Cylinders

Write for further details.

STANDARD OIL ENGINE COMPANY

Woolworth Building New York City, U. S. A.

Works: Bridgeport, Conn.

UNIVERSAL

HIGH GRADE ACCESSORIES

13" galv. Steering Wheels	$1.20
Brass Stuffing Box, 1" size	1.20
6" Peg Bolts	1.00
Fire Extinguisher	.35
Schebler Carburetor, 1⅛"	7.55
Class 1 Equipment, consisting of Lamps, Fire Extinguisher, Whistle and Life Preserver	5.85
Class 2 Equipment, consisting of 4 Lamps, Horn, Fire Extinguisher, Bell and Life Preserver	11.50
Class 3 Equipment, consisting of 4 Lamps, Horn, Fire Extinguisher, Bell and Life Preserver	13.50
1" Pat. Brass Flush Flag Pole Sockets, Bow and Stern, per pair	.45

UNIVERSAL MOTOR BOAT SUPPLY CO.

Atlantic Highlands New Jersey

Motor Boatmen Are Barred

(*Continued from page 7*)

and close the doors they did. Now knock as hard as you will, unless you have a steam gauge and the proper credentials in your pockets, you must remain on the outside. All this was made possible many years ago with the aid of Congress which generally doesn't worry about details and no one has yet seen fit or at least succeeded in showing them their folly. But it is bound to come.

When one with the odor of gasoline about his clothes now attempts to call upon one of these inspectors to argue this or that point or to stand up for his rights he is courteously received, that is, until the official finds out his mission and realizes that he is talking to one who knows what he is saying. Then all changes to the conversation of the clam,—a mighty batch of papers is thrust into the caller's hands with the information that all he desires to know is printed therein. The official then excuses himself with the apologies that many are waiting and time is precious.

With the laying of the keels for the first of the new merchant fleet many began casting about to determine where the officers and men were to come from to man the ships. Surely crews were as important as vessels. Men must be trained for the important positions which would be created with the completion of the boats. But then came the important question, where shall we get the men to train? Naturally many said go to the technical schools and colleges and get a class of young men who will eventually make first class officers, others said that among yachtsmen and motor boatmen of the country there are thousands qualified to almost immediately take up the work. They had in mind many such men that have navigated craft to Bermuda and found no difficulty in locating this needle in the haystack, a feat which few, if any, masters of sea-going vessels could do if put on the deck of a small vessel; such men as have sailed in the Halifax, Havana and Marblehead races and never missed their marks, have taken Sea Bird and Detroit across the ocean, and many others who have studied and had similar experiences all their lives. A logical suggestion we must admit, well worthy of carrying into effect.

But what did our friends, the steamboat Inspectors, think of such a plan. It is doubtful whether they even thought. But they did say, "Nothing Doing". "The officers will be of our choosing and will come from our own ranks". "All Others Barred". And being the court of first and last appeal they are having their way.

The United States Shipping Board announces that it needs 5,000 new watch officers and 5,000 new engineers for the new National fleet of merchantmen which it is creating and which will be controlled by the United States Government. They tell us first mates are getting as high as $375 a month and engineers $450 for a similar period. To get these officers it has started free training schools in many of the large cities and seaport towns. But who can attend these schools? Why only those whose applications are O K'd by the local inspectors. Motor Boatmen? Never!

A further point to prove the selfish and childish attitude of the Board of Inspectors is the fact that a large number of the instructors in these schools are yachtsmen and amateurs, men who cannot take out licenses themselves as they have not served on commercial craft.

Some of the larger cities have no schools, New York for example, the reason being, so it is stated, that the Inspectors will not permit a training school to be conducted in a city where there is an established school which charges the students a fee and which is run by their own kind.

LEECE-NEVILLE

ELECTRIC STARTING-LIGHTING SYSTEM

OUTFITS OF QUALITY

AUTOMOBILES — ALWAYS READY — MOTOR BOATS

DAY OR NIGHT

MANUFACTURED BY

THE LEECE-NEVILLE COMPANY

CLEVELAND, OHIO

WICKER-KRAFT

YACHT FURNITURE

Used on the finest boats. Regularly supplied by highest grade boat builders. Wicker-Kraft Chairs, fitted with life belts, are an original Wicker-Kraft idea.

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W & M REVERSING WHEELS
Convenience Speed, Strength, Control. Catalog Free
Wilmarth & Morman Co.
1169 Monroe Ave. Grand Rapids, Mich.

POLARINE

The Standard Oil For All Motors

Standard Oil Co. of New York

STANLEY MARINE MOTOR

High in Quality—Low in Price

THE STANLEY CO.

SALEM, MASS.

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Gasoline and Motor Oils

MOTOR BOATS — ROWBOATS — CANOES — HUNTING BOATS — and BOATS for DETACHABLE MOTORS. CATALOG FREE. Prices based on selling direct to the user. Please state what kind of boat you are interested in.

THOMPSON BROS. BOAT MFG. CO.

35 Ellis Ave. PESHTIGO, WIS.

Statement of the Ownership, Management, etc., required by the Act of Congress of August 24, 1912, of MoToR BoatinG, published monthly at New York, N. Y., for Oct. 1, 1917.

State of New York, County of New York, ss. Before me, a Notary Public in and for the State and county aforesaid, personally appeared E. C. Wright, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the MoToR BoatinG Magazine and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, International Magazine Company, 119 West 40th St., New York, N. Y.; Editor, C. F. Chapman, 119 West 40th St., New York, N. Y.; Managing Editor, C. F. Chapman, 119 West 40th St., New York, N. Y.; Business Manager, E. C. Wright, 119 West 40th St., New York, N. Y.

2. That the owners are: International Magazine Company, 119 West 40th St., New York, N. Y. Stockholders: W. R. Hearst, 137 Riverside Drive, New York, N. Y.; M. V. Hearst, 137 Riverside Drive, New York, N. Y.

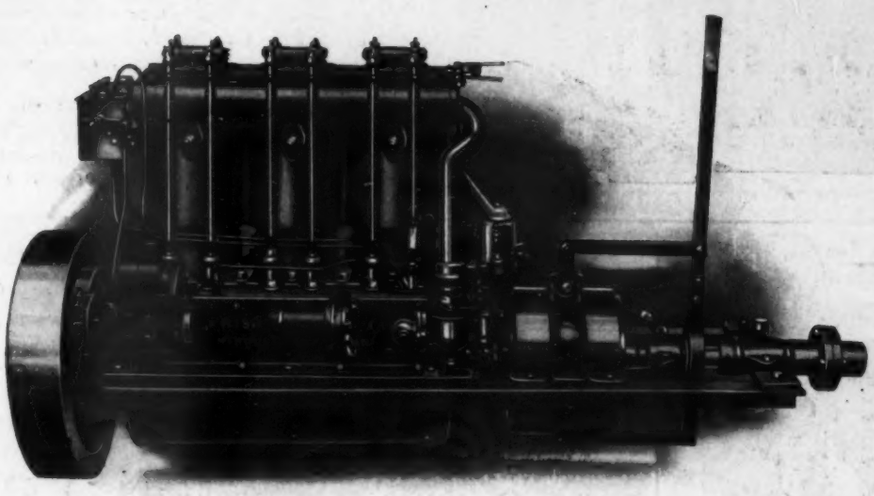
3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: Columbia Trust Co., 60 Broadway, New York, N. Y.; M. V. Hearst, 137 Riverside Drive, New York, N. Y.; W. R. Hearst, 137 Riverside Drive, New York, N. Y.; Arthur Brisbane, 238 William Street, New York, N. Y.; Lina Strauss, 27 West 72nd St., New York, N. Y.; George J. Gould, 165 Broadway, New York, N. Y.; E. H. Gary, 856 Fifth Ave., New York, N. Y.; Samuel Untermyer, 37 Wall Street, New York, N. Y.; George W. Perkins, 71 Broadway, New York, N. Y.; James Speyer, 1038 Fifth Ave., New York, N. Y.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustee, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest, direct or indirect, in the said stock, bonds, or other securities than as so stated by him.

(Signed) E. C. WRIGHT, Business Manager.

Sworn to and subscribed before me this 28th day of September, 1917. S. B. Flaum, Notary Public, New York County. (My commission expires March 30, 1918.) (Seal.)

RELIABILITY



Three Cylinder, 18-25 H. P. Bore 6", Stroke 6", Speed 400-550 R. P. M. Minimum Speed 150 R. P. M. Weight with Reverse Gear, 1050 lbs. Length, 65¾ in. Other Frisbie motors in sizes from 3 to 75 H. P., one to six cylinders.

RELIABILITY:—This word means more to the power boat man and the motor-boatist than any other word in the English language. It is the very foundation of contentment and service.

RELIABILITY in the power plant in your craft or in the one you expect to own makes for greater efficiency, greater convenience and greater economy.

You want a motor you can absolutely rely upon; one that will give you constant service; a motor that has demonstrated its powers of endurance beyond the shadow of a doubt. You want a FRISBIE VALVE-IN-HEAD MOTOR.

Frisbie VALVE-IN-HEAD MOTOR

The FRISBIE motor is simple in construction. It is different. The valve-in-head design means more power, greater elasticity, and it is built for many years of faithful service.

Write us for detailed explanation of its other advantages and for definite facts and figures covering your requirements. Let us also send you names of FRISBIE owners and our illustrated catalogue.

THE FRISBIE MOTOR COMPANY

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FINISHED CRANK SHAFTS

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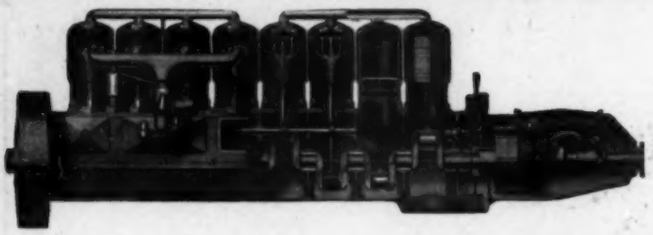
We are furnishing them to some of the leading marine engine builders. Carbon and Alloy Steel, Heat Treated to your own specifications. We grind all Pins and Bearings. Forged, machined, and finished complete in our own plant. Let us quote you.



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Four Cycle Type. 5 to 200 Horsepower. Made in 2, 4, 6 and 8 Cylinders.

For Cruising, Racing, Fishing, Freighting

Smooth, well-balanced and symmetrical in design, powerful and thoroughly dependable in operation, they are the embodiment of the best engineering effort.

OVER 11 YEARS' SUCCESSFUL SERVICE THROUGHOUT THE WORLD.

The strongest possible guarantee by a company thoroughly responsible, financially, stands behind every NIAGARA. You will never regret it if you

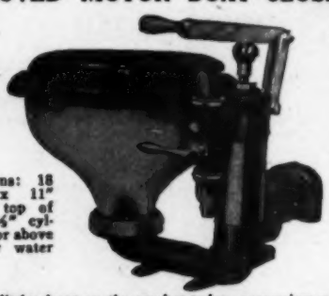
PUT THE POWER OF NIAGARA IN YOUR BOAT.

NIAGARA MOTORS CORPORATION

524 Ellicott Square BUFFALO, N. Y.

FIGURE 1404

IMPROVED MOTOR BOAT CLOSET



Dimensions: 18 x 18 x 11" high to top of bowl; 2½" cylinder. For above or below water line.

The best little closet on the market today, possessing many of the advantages of the large size toilet. All brass and porcelain. Oak seat and cover.

All prices subject to market advances, which are continually changing.

Price ---------- $25.00

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THE KENNEDY MACHINE CO., manufacturing the "BULL DOG" Reverse Gear, the gear that "never fails to grip," desires to establish agencies all over the country, and anyone interested in handling the best gear on the market today, will communicate with them for terms, etc.

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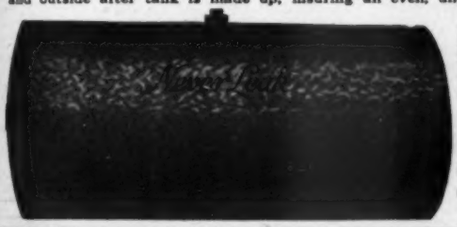

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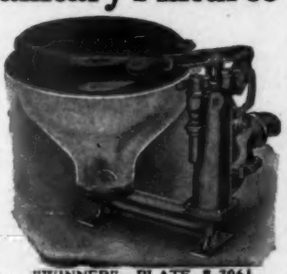

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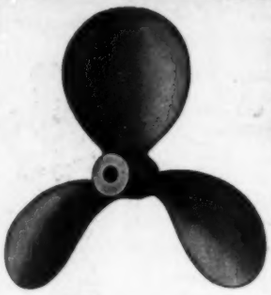

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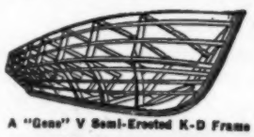

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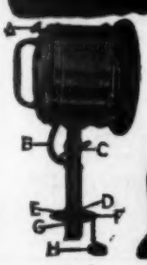
In the Cello "Wire-Less" Systems, there are no wires above the deck to connect or get water soaked

Cello Searchlights operate on six ordinary dry batteries, or on storage dynamo or generator. They throw such a powerful light that you can read 1000 FEET AWAY FROM THE LIGHT

The CELLO Running Lights have no wires above the deck. Merely a flush socket on deck which is absolutely waterproof at all times. Work on either one dry battery or a 6-volt system.



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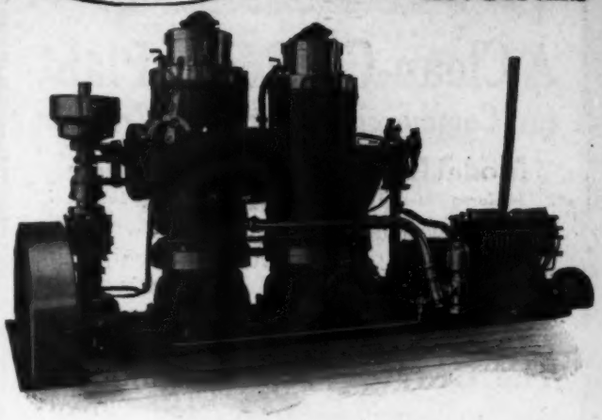

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You carry only one kind of fuel (crude oil) which is used for starting and operating.

Built in sizes 60 H. P. and up.
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Model D-4, Medium Heavy Duty
36 Horse Power Bore, 4½ inches Stroke, 5 inches

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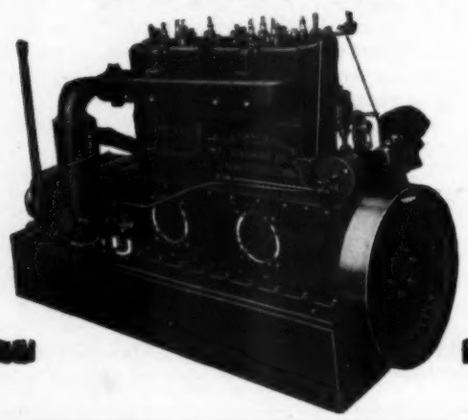

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are installed just like a rigid flange coupling—in place of the rigid coupling—they provide a flexible link between the propeller shaft and the engine or reverse gear shaft—they eliminate friction, hot bearings, leaky stuffing boxes and their use results in better satisfaction and the knowledge that all your power is going into driving force—none into unnecessary friction and shaft binding. Write for (new) 1917 Bulletin.

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Highest fuel economy. Extreme simplicity.
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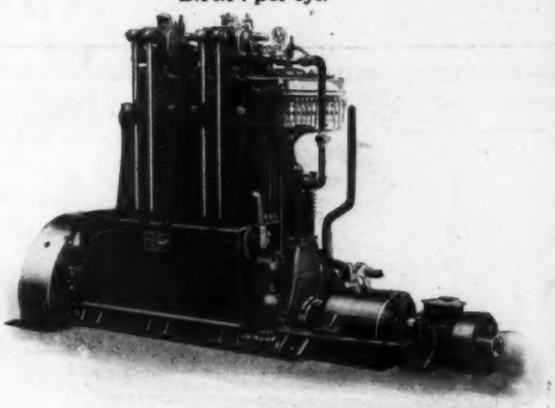
The simplest and most reliable engine built.

Thousands in use now in sizes from 1½ B.H.P. to 100 B.H.P. per cyl.



View showing a 2-cylinder, 20 B.H.P. Hvid Oil Engine as built by the Burnoil Engine Company, South Bend, Ind.

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Any good reverse gear means greater safety for your boat than no reverse at all, but Joe's Gear means the *highest degree of safety* for it is the surest, most dependable gear made.

Joe's Gears are made for all sizes and types of boats—strong, light weight gears for small boats and big, tremendously strong gears for heavy auxiliaries, cruisers and commercial boats. *High reverse ratio.*

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Low Price One-Way Clutches for fishermen, etc.

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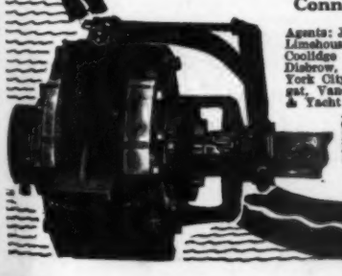

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YOU WILL, OF COURSE, WANT A

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Racine Wis boats are backed by 21 years of boat building skill and experience.

The name "Racine Wis" is the "Sterling" hallmark of boatdom.

Write for our catalogue of Speed and Semi-Speed boats, family motor boats, cruisers, row-boats, and the finest canoe in America—the Racine Wis. Please state the type of boat in which you are interested when writing.

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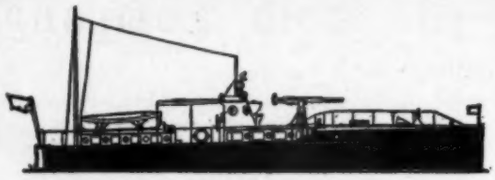

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We are prepared to accept orders for Duplicates from Yachtsmen who will appreciate what this achievement means.

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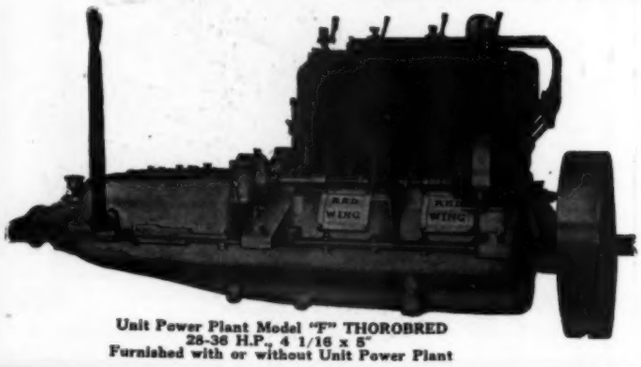
THE MOTOR WITH POWER TO SPARE



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28-36 H.P., 4 1/16 x 5"
Furnished with or without Unit Power Plant

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One of the big dredging companies whose immense "sand suckers" drag up the bed of the Mississippi and distribute it over new factory sites and park locations, employs as a vital part of its operating equipment, a big flat scow, 30 feet long and 6 feet wide. It hauls coal barges, supply barges, runs errands, shifts the dredges—even tows these huge hulks and their fleet of pipe barges against the strong current of the Mississippi. This scow is one of the hardest working boats in existence. It's on the job all the time and no task is too big for it. It works from 8 to 10 hours a day every day, plugging along with a tow, or shooting on an errand at 15 miles an hour.

This dredge tender is powered with a Model F Red Wing Thorobred. It's a hard worker and a money-saver for the Dredging Company whose managers count costs carefully.

If you want real satisfaction and real service in your work boat you can't go wrong on a Thorobred. And they've driven speed boats over 30 miles an hour, without alteration.

The Thorobred also burns kerosene for fuel, if desired.

14 to 40 H.P. 4 cycle.

Write today for the full facts.

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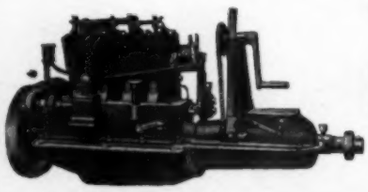
THE 1918 UNIVERSAL

Has all the attractive features of the 1917 model with a few refinements. It is the ideal motor for one class racers. Just as suitable for work boats or for trolling. Get Bulletin No. 25 and learn the features of this popular motor.



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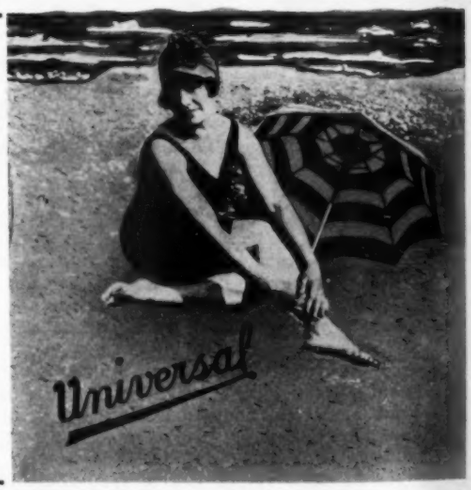
Oshkosh, Wis.



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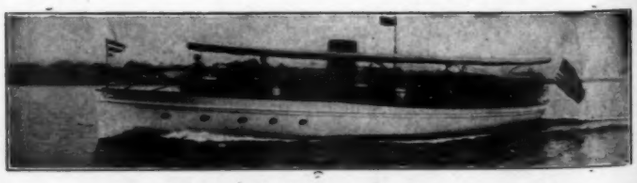

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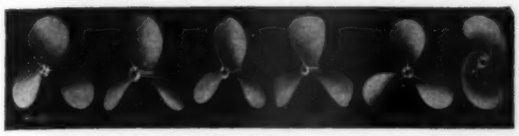

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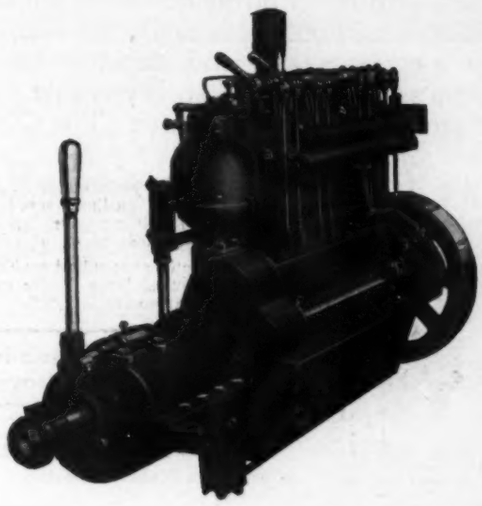

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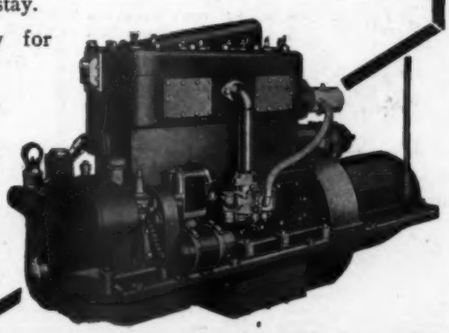

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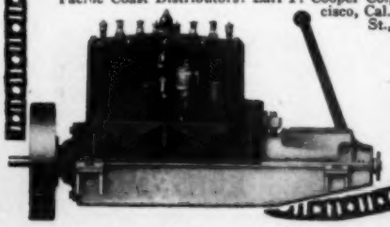

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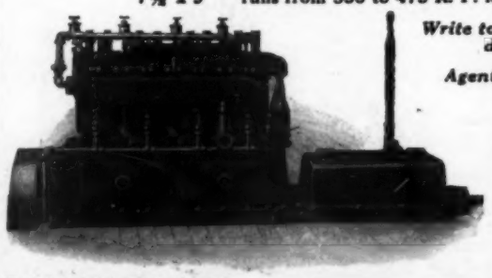
3-Cyl. ....7½ x 9 ", 35-45 H.P.
4-Cyl. ....6 x 7½", 30-40 H.P.
4-Cyl. ....7½ x 9 ", 45-60 H.P.
6-Cyl. ....6 x 7½", 45-65 H.P.
6-Cyl. ....7½ x 9 ", 70-90 H.P.

6 x 7½" runs from 400 to 550 R. P. M.
7½ x 9 " runs from 350 to 475 R. P. M.



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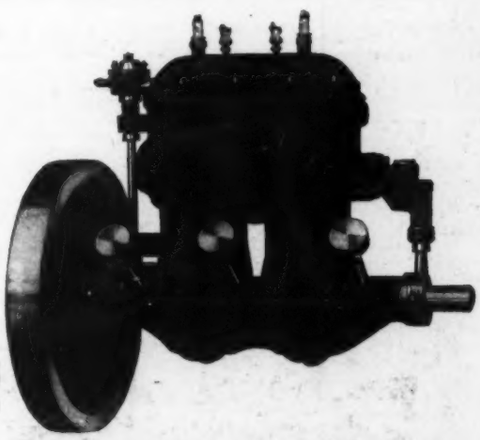

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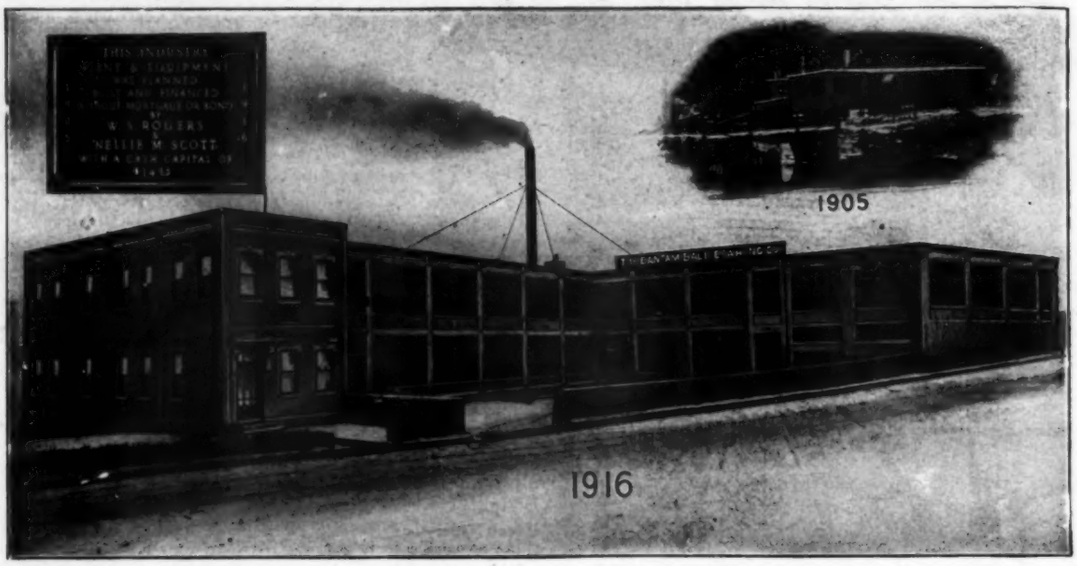

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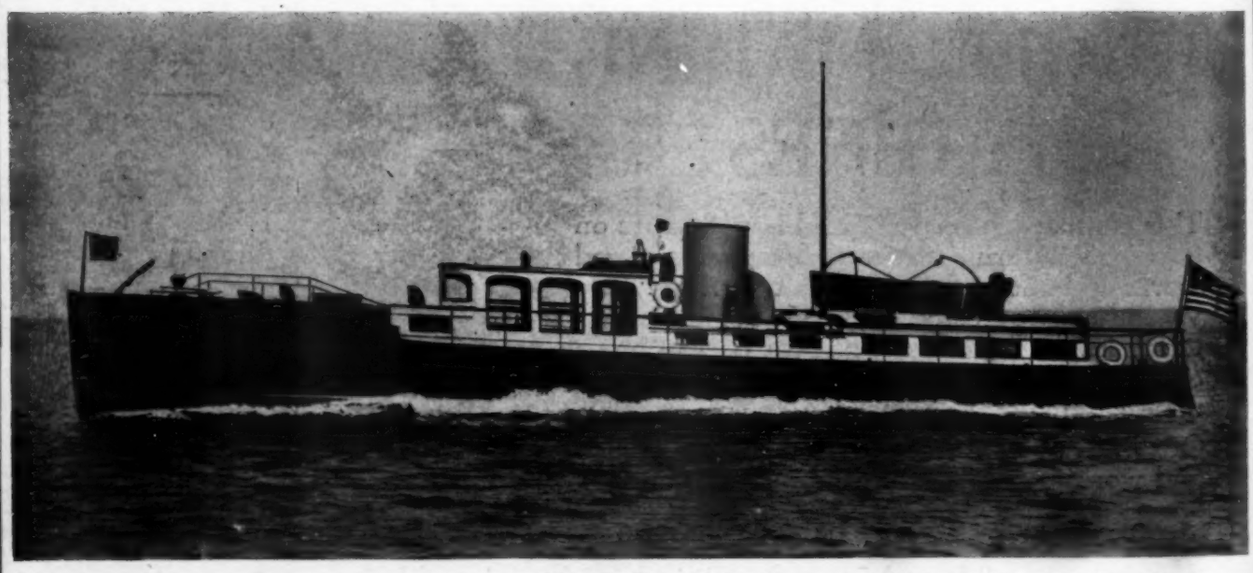

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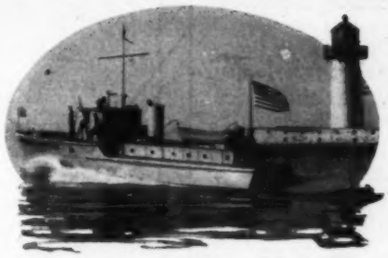
Miss Toledo is a Patrol Type Express Cruiser, built for Mr. R. M. Ellery of Toledo, Ohio, and launched late in September. Now in Government service. Powered with two 8-cylinder 200 H.P. Van Blerck engines.



The practical speed and sea qualities of Miss Toledo, as well as the handsome finish and unusually comfortable living accommodations, provide an excellent example of Dachel-Carter skill in boat designing and building.

If you are interested in Express Cruisers, let us tell you more about Miss Toledo. We also specialize on fine mahogany finished runabouts, equipped for salt water service. It will pay you to get in touch with us before you order your new boat.

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It's only the gas which actually develops power that counts.

The gas which escapes through leaky piston rings is like the water that goes over the dam;—neither of them turns a wheel.

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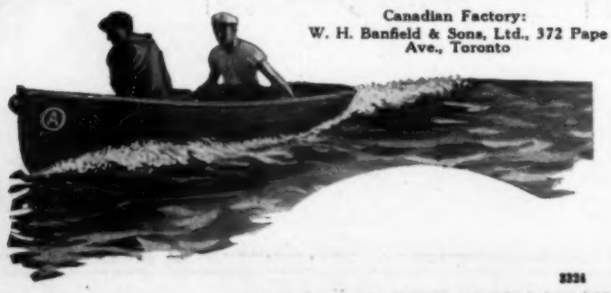

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WHITE FOR SAFETY—for navigating dark and unfamiliar channels, avoiding rocks, picking up buoys, making landings, etc. A powerful penetrating light that carries far and insures safety at night.

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The Red Spot can be operated on regular lighting system, storage or multiple dry battery. Diameter 5¼", height 10". Easily removed from base for stowing away.

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Soldiers, sailors, doctors, nurses, diplomats, business men—people sailing on practically every ocean liner now afloat are carrying the

Ever-Warm Safety-Suit

Chester Beecroft, motion picture exporter, says:

"The ship on which I was traveling was torpedoed in the North Sea and I was in the water more than four hours until rescued. The suit kept me dry and comparatively comfortable all the time. If it had not been for my Ever-Warm Safety-Suit, I likely would have shared the fate of many who were drowned."

Dr. George E. Brewer, head of the Presbyterian Hospital Unit says: "I regard the Ever-Warm Safety-Suit as 90% life insurance. The nurses and doctors, ready to sacrifice their lives on the other side, are entitled to this protection."

An army officer describing the ramming of a transport tells of the feeling of security his party enjoyed knowing that the Safety-Suit would protect them.

The Ever-Warm Safety-Suit is the most complete protection against the dangers of sea travel ever devised. It is more than an ordinary life preserver intended only to keep the wearer afloat. It is a warm little home in the water, a seaworthy human boat, a safe resting place until rescuers arrive. It keeps the wearer warm, dry and comfortable, no matter how long it is necessary to stay in the water.

The Ever-Warm Safety-Suit gets its buoyancy **not from air,** but from a special composition with which the upper part is lined. This material, approved by the U. S. Government for life preservers, has five times the buoyancy of cork. It enables the wearer to support at least five other persons in the water. The padding, or lining, will not absorb water—you will be kept afloat indefinitely, even if the suit be torn or cut.

A pocket is provided for carrying liquid food, also a whistle for attracting attention of rescuers. The suit can be put on or taken off in less than a minute.

Order your suit as early as possible. The demand is tremendous. Write today for prices.

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The Kingston is today the world's most popular carburetor.

So far as we know we are now producing more carburetors than any other manufacturer in this line, and this is not the time of year for our maximum production.

The demand is keeping our plant busy night and day,—and we are the largest carburetor manufacturers in the world.

There is a real reason for Kingston popularity. It is the all-around efficiency of the Kingston Carburetor.

Used on automobiles, marine engines, tractors, motor cycles and for general gas engine work.

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At All Newsstands

FLYING ASSOCIATION
280 Madison Avenue
New York City

Practical Navigation for the Motor Boatman

(*Continued from page 50*)

Where the compass is so located that bearings may be taken of objects in any direction with the "sight vane"—see illustration—a simpler method of getting the deviations may be used. Here it is necessary to find the bearing from the chart of only one range between aids to navigation and then cross this range with the boat heading by compass on the course upon which the deviation is to be found. By taking the bearing of the range with the "sight vane" and comparing this with the magnetic bearing of the range the deviation for the course upon which the boat was running may be found.

The motor boat usually carries but one compass while the ocean going vessel has a much more elaborate equipment. On such vessels there are always three compasses and often several more. A steering compass is provided at the wheel and at the emergency steering gear and there is perhaps another on the bridge if the wheel is not located there. Then in some part of the vessel as far removed from magnetic influence as possible is located the standard compass. This instrument is very carefully corrected and the deviations very accurately known, it is if possible located so as to command a view of the entire horizon except where smoke stacks and masts intervene, and by this instrument all courses are set and all important bearings taken. Because of the trouble with deviation on war ships where large shocks, such as are caused by gun fire, change the magnetism of the ship and consequently the deviation; it is usual to employ gyroscopic compasses. These compasses depend for their action upon the fact that a gyroscope when free to swing will arrange itself so that the earth's rotation will not change the direction of its own axis of rotation. A moment's reflection will show that this will cause the gyroscope to place its axis parallel to that of the earth and thus indicate true north. Gyroscopic compasses are free from the errors of the magnetic compass, but they are exceedingly delicate and expensive instruments. It is usual in naval vessels to have one fine gyro compass down below which controls compass dials in the binnacle and elsewhere electrically.

It may seem to the reader that a great deal too much time has been spent in covering the compass and its errors, but if the subject is *mastered* the most elusive point in navigation has been mastered. The writer has had more trouble getting men in his classes to understand the application of compass errors than any other one point, hence the lengthy discussion here. Real proficiency in handling compass errors comes with practice, so the student is advised to set himself many problems in the correction of courses, and if possible to make a deviation table for his own craft's compass. The practice will be excellent.

Now to work a position by dead reckoning, provided the vessel has not gone out of the area mapped on one chart, it is only necessary to know the compass courses, the deviations of the compass on these courses, and the distance sailed on each course. On large vessels this distance can be obtained from the patent log—see Bowditch page 12 for description—or from the number of revolutions made by the screw; on small boats it is usually determined by the speed of the vessel as known from the r.p.m. of the engine, and the length of time for which each course was held. The log book should show each course taken by the vessel, the length of time the course was held, and the distance run, it should also give any other information that will be of value to the navigator in finding his position. Having obtained this information from the log book it is necessary to correct the compass courses, getting either the true or magnetic courses, and then plot these corrected courses on the chart, beginning from the point of departure and taking the courses in the order sailed. Each course is laid off in the proper direction by means of the parallel rulers, the rulers being first placed on the nearest compass rose so that the ruling edge runs through the center of the rose and the point which indicates the course—the inner rose is used if the courses have been corrected for deviation only and are therefore "magnetic," and the outer rose if the corrected courses are "true"—and the rulers are then moved across the chart by first moving one arm and then the other until the ruling edge passes through the beginning of the particular course being plotted. The course is now drawn in pencil and the appropriate length layed off with dividers from the scale of miles. Subsequent courses are similarly treated until all the courses have been plotted. The end of the broken line on the chart will indicate the position of the boat provided no current has carried her in some indeterminate direction. If there is a current whose direction and speed are known it can be allowed for by plotting a final course on the "traverse" whose direction is the direction of the current and whose length the distance the current will have run while the vessel has been under way. All this is illustrated by Fig. 5.

The method of working dead reckoning given above is only applicable to large scale charts—polyconic projections they are technically called —which have a scale of miles on them. The method of applying this principle to mercator projections will be taken up next month. In the meantime the beginner had better supply himself with Bowditch and read over what that excellent work has to say about the matters that have been taken up here. It would also be well to read what is said about compass errors in Practical Motor Boat Handling.

The next installment of this series will appear in the December issue of MOTOR BOATING. It will take up other finds of charts. The mercator projection and why it has no scale of miles on it and how we use it nevertheless. Extension of previous method of working dead reckoning to cover the mercator projection. Working dead reckoning by traverse sailing and middle latitude sailing. Taking departures.—*Editor.*

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Because the Berling Magneto is the first choice of leaders in every branch of the motor industry—

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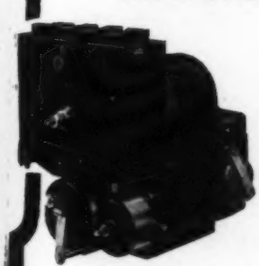

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DECEMBER MOTOR BOATING this year will be the largest and most complete issue we have ever published. Always a big and important reference number, this time we are making unusual preparations because it will record ten years of successful development of MoToR BoatinG, the magazine, and ten years' growth of motor boating as a sport and industry.

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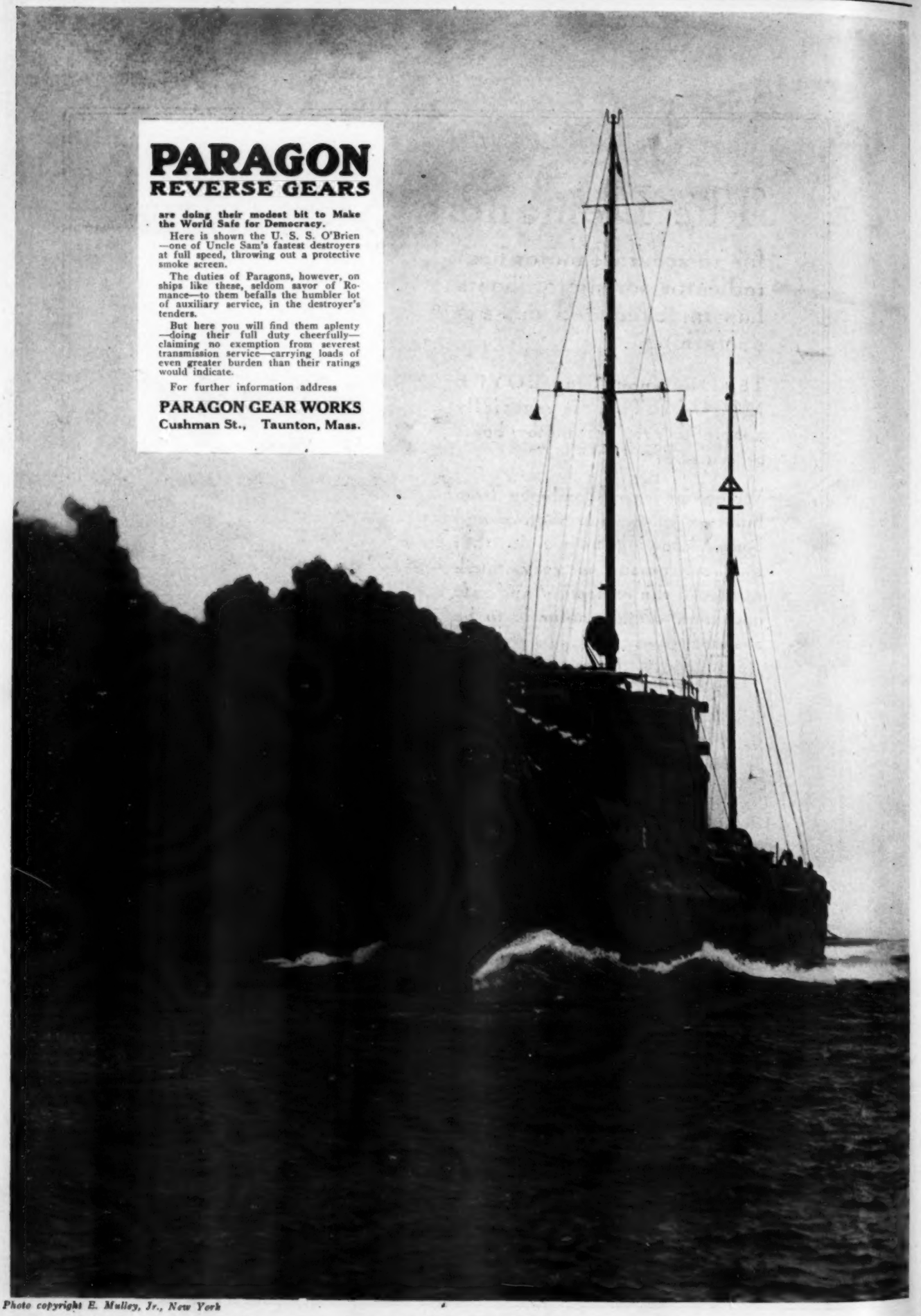

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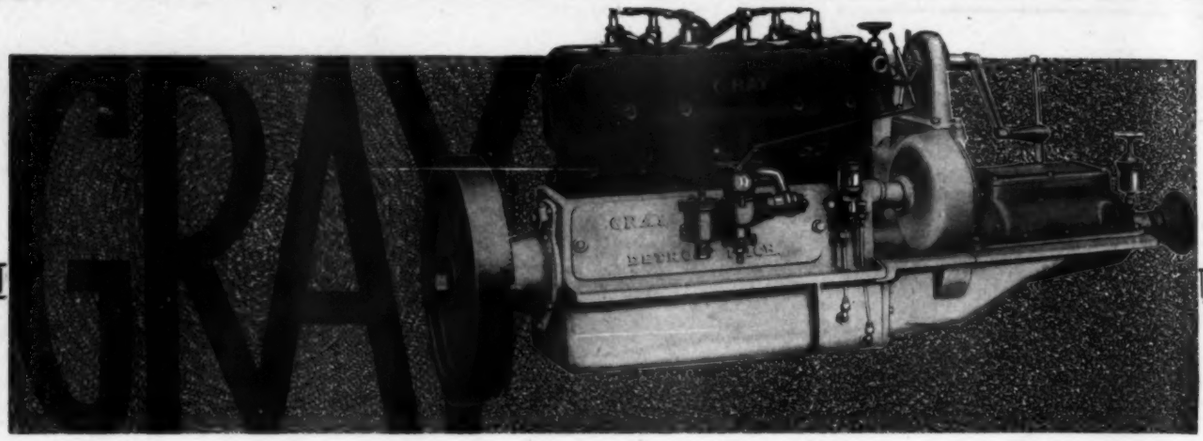

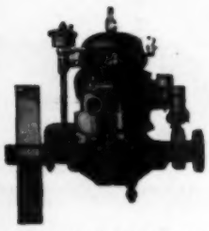

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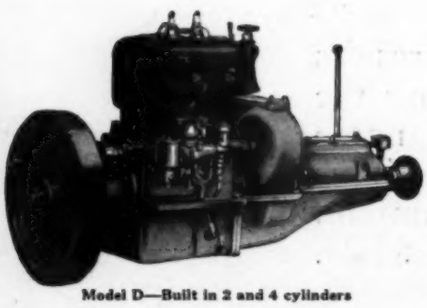

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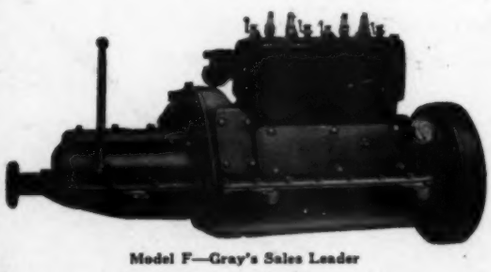

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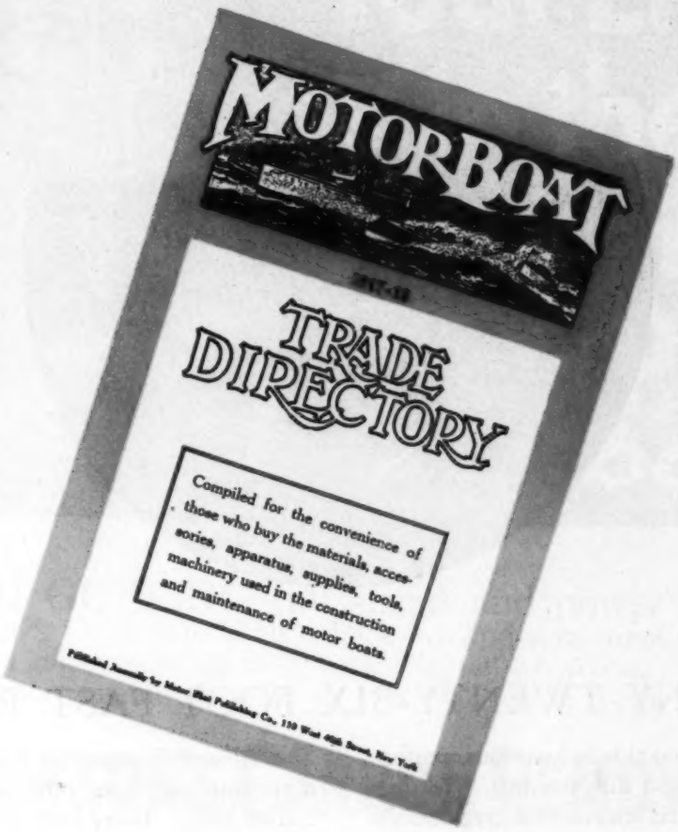
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Compiled for the convenience of those who buy the materials, accessories, apparatus, supplies, tools, machinery used in the construction and maintenance of motor boats.

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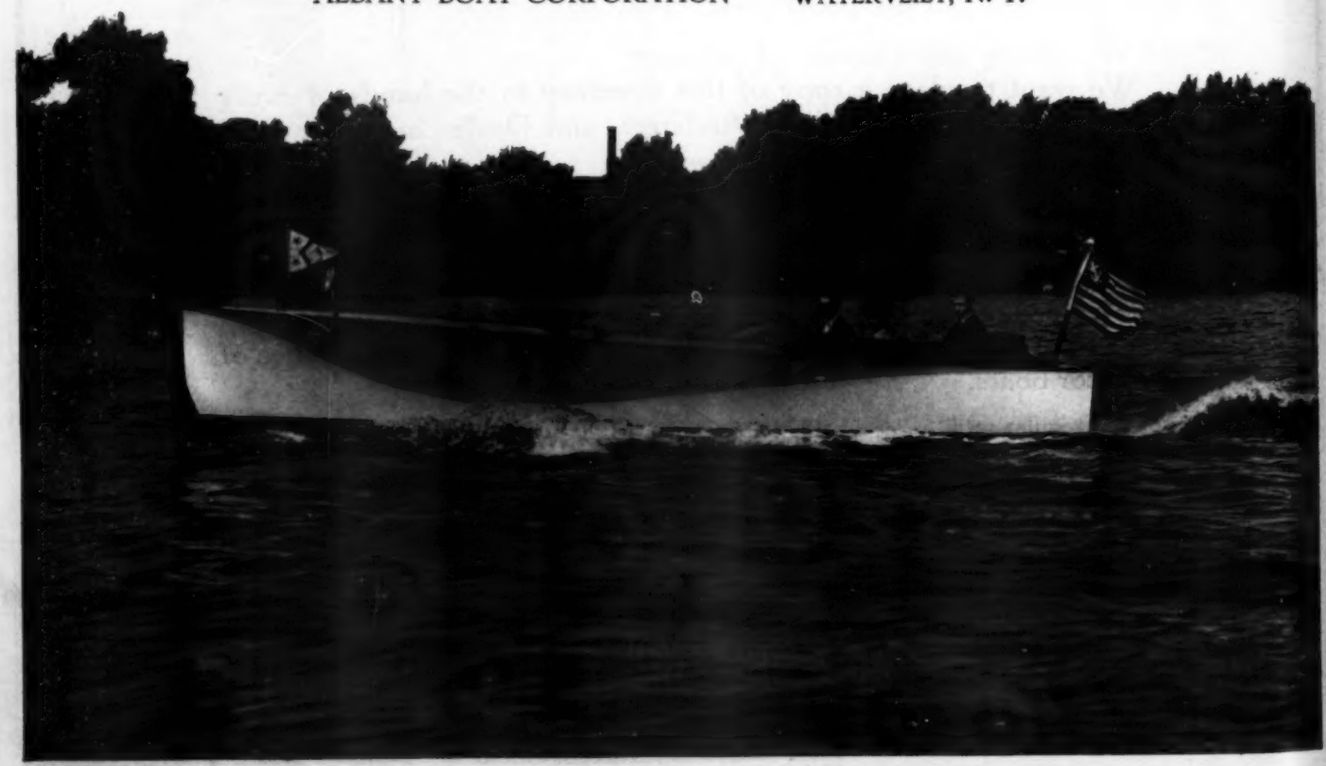

Your Engine is in the Grip of the "Black Plague" (Carbon)

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Five minutes' time and no labor required. Simply pour an ounce or two of Johnson's Carbon Remover into each cylinder through the petcocks or spark plug openings. Go about your other affairs for from three to twelve hours—then start your engine. The bulk of the carbon will immediately blow out and the balance will come out for the next twenty-five or fifty miles—until the engine is as clean and sweet as it was when new.

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OUR GUARANTEE

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We will send you by prepaid express for **$1.00** (bill or stamps) enough Johnson's Guaranteed Carbon Remover to thoroughly clean an ordinary four-cylinder motor three times.

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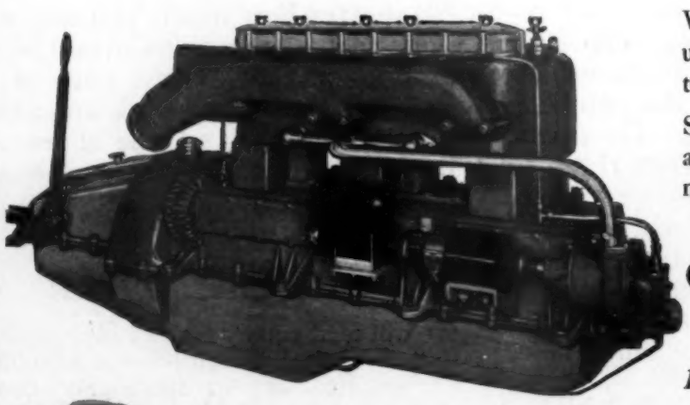
The Silent Valve Driggs-Motor in a speedy cruiser or runabout insures Speed *with* Silence.



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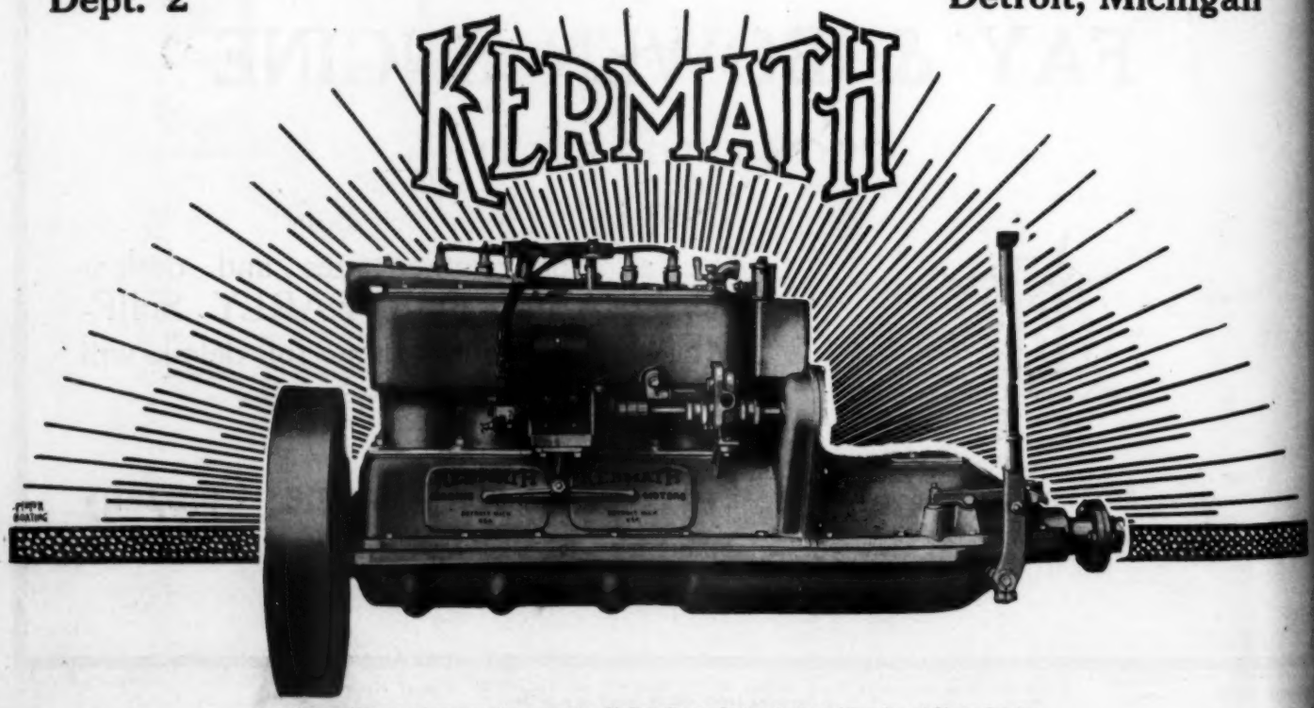

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